

# Open Research Online

---

The Open University's repository of research publications and other research outputs

## Logic and reality in the philosophy of John Stuart Mill

### Thesis

#### How to cite:

Scarre, Geoffrey Francis (1986). Logic and reality in the philosophy of John Stuart Mill. PhD thesis The Open University.

For guidance on citations see [FAQs](#).

© 1985 The Author



<https://creativecommons.org/licenses/by-nc-nd/4.0/>

Version: Version of Record

Link(s) to article on publisher's website:

<http://dx.doi.org/doi:10.21954/ou.ro.0000f807>

---

Copyright and Moral Rights for the articles on this site are retained by the individual authors and/or other copyright owners. For more information on Open Research Online's data [policy](#) on reuse of materials please consult the policies page.

---

[oro.open.ac.uk](http://oro.open.ac.uk)

D 68524/86

UNRESTRICTED

LOGIC AND REALITY  
IN THE PHILOSOPHY  
OF JOHN STUART MILL

By Geoffrey Francis Scarre, M.A., M.Litt. (Cantab.),  
P.G.C.E. (Leeds).

A dissertation offered for the degree of Ph.D. of  
the Open University, in the discipline of  
Philosophy.

VOL I

Autumn 1985.

Date of Submission: Dec 1985

Date of Award: 10.2.86

ProQuest Number: 27775893

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent on the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



ProQuest 27775893

Published by ProQuest LLC (2020). Copyright of the Dissertation is held by the Author.

All Rights Reserved.

This work is protected against unauthorized copying under Title 17, United States Code  
Microform Edition © ProQuest LLC.

ProQuest LLC  
789 East Eisenhower Parkway  
P.O. Box 1346  
Ann Arbor, MI 48106 - 1346

## C O N T E N T S

Prefatory Notes	iii
Abstract	iv
Introduction	1
One: Knowledge by Inference	16
Two: Problems about Proof and Implication	41
Three: Mill's Positive Theories of Inference and the Syllogism	71
Four: The Possibility of Inductive Reasoning	87
Appendix to Chapter Four	109
Five: Logic and the Objective World	113
Six: Global Empiricism	136
Seven: The Relativity of Knowledge	166
Eight: The World and Its Subject	185
Nine: Mill's Inconsistent Empiricism	220
Notes	241
Bibliography	261



## Prefatory Notes

I should like to record my gratitude to my supervisors, Mr Roland Hall of York University and Dr Stuart Brown of the Open University, for their help and encouragement during the preparation of this dissertation.

Earlier versions of Chapters Two and Four have been published in, respectively, History and Philosophy of Logic, vol. 5 (1984) and The Mill News Letter, vol. 18 (1983); full details of these publications will be found in the Bibliography.

Darlington, Co. Durham,  
1985.

G.F.S.

Logic and Reality in the Philosophy of John Stuart Mill - accompanying statement.

I declare that the above-named dissertation represents my own original work, and that no part of it has previously been submitted for a degree or other qualification at any other university or institution.

Ancestral versions of Chapters Two and Four have been published in, respectively, History and Philosophy of Logic, vol.5 (1984) and The Mill News Letter, vol.18 (1983); full details of these publications are to be found in the Bibliography.

I place on record my gratitude to my External Supervisor, Mr Roland Hall of York University, and to my Internal Supervisor, Dr Stuart Brown, for their useful comments and criticism on my research on Mill. I am grateful, too, to Professor John Corcoran of the University of Buffalo who, as referee for History and Philosophy of Logic, made some helpful suggestions from which I have benefited in preparing Chapter Two; his suggestions have been fully detailed in the text or notes.

I consent to my dissertation being made available to readers and to its being photocopied at the discretion of the Librarian of the Open University.

Geoffrey Francis Scarre,  
November 1985.

This study of the leading principles of Mill's empiricist metaphysics and philosophy of logic aims to provide accurate (and often revisionary) exegesis and criticism of his theories, and to show their pertinence to current philosophical debates. Mill's views on the attainment of knowledge by inference, the problems of suasive syllogisms, and the possibility of inductive inference are first discussed, and it is argued that his philosophy of logic is informed by a realist theory of error. Subsequently, attention is paid to his uncompromising rejection of a priori avenues to knowledge about objective reality, and his allegiance to a radical empiricist principle that all knowledge is of phenomena alone. A scrutiny of Mill's theories of the experienced world and of the experiencing self brings the discussion to the point at which it emerges clearly that there is a deep tension within his thought between a form of empiricism which approximates to a variety of scientific realism, and another which leans towards sensationalistic reductionism.

## INTRODUCTION

'Nobody reads Mill today,' wrote a reviewer in Time magazine a few years ago.<sup>1</sup> One could scarcely praise Mr Melvin Maddocks, who penned that remark, for his awareness of the present state of Mill studies, for of all nineteenth century philosophers who wrote in English, it is J.S. Mill who remains the most read today. Yet it would not be so far from the truth to say that very few people pay much serious attention nowadays to Mill's writings about logic and metaphysics (as distinct from those on ethical and social issues), despite the fact that Mill put enormous effort into their composition and through them exerted a considerable influence on the course of European philosophy for the rest of his century. But the only sections of A System of Logic (1843) and An Examination of Sir William Hamilton's Philosophy (1865) to which much reference is now made comprise only a small proportion of those very large books, and the prevailing assumption is that Mill's theories about logical and metaphysical questions are, with few exceptions, of merely antiquarian interest.

Bertrand Russell once said that Mill's misfortune was to be born at the wrong time (Russell (1951), p.2). It can certainly appear that Mill chose an inauspicious time to attempt a major work on logic. The greatest revolution in logical studies since Aristotle lay just a little ahead when the early editions of the Logic were rolling off the presses, but Mill failed to anticipate, nor in his later years did he show much sympathy with, the great developments in symbolic logic with which his younger contemporaries Boole, De Morgan, Jevons and Venn were associated. Shortly before his death he described the attempt to provide an improved symbolic presentation of logic as a 'vice,' and declared that it implied 'the existence of greater precision in the data than the questions admit of' (letter to John Elliot Cairnes, LL, p.1862). This blindness to the merits of symbolic logic has very understandably raised doubts in

the minds of twentieth century philosophers as to whether what Mill had to say about deductive logic could still be of much interest. Russell's dismissive judgement was that, 'Everything that Mill has to say in his Logic about matters other than inductive inference is perfunctory and conventional' (Russell, loc. cit.). Even his philosophy of induction (to which the bulk of the Logic is devoted) has in recent years tended to fall out of view as an increasing amount of attention has been paid to the theories in this area of Mill's arch-rival Whewell, who had a more detailed knowledge of the sciences of his day and, arguably, a deeper apprehension of the actual methods of scientific investigation.<sup>2</sup> Had Mill set out to write a study of the inductive sciences a few years later, it is possible that a consideration of their rapid recent progress would have led him to construct a somewhat more adventurous philosophy of science than is found in the Logic. Then again, his views on epistemological and ontological issues are often thought to be badly, even fatally, flawed by depending, allegedly, on an associationist psychology which was respectable enough when Mill wrote but which was, shortly to be utterly discredited by such critics as F.H. Bradley and James Ward. It has been remarked by John Passmore that the education Mill received from his father, the philosopher and political economist James Mill, had the object of turning him into an eighteenth century philosopher (Passmore, p.13); and that, one might suppose, is just the trouble with him: his thought is fundamentally backward rather than forward looking, and by our contemporary standards impossibly outdated.

A major purpose of the present study is to show that the prevailing neglect of Mill's logical and metaphysical writings is unfortunate and unjustified. Mill tackled, in a very systematic and thorough way, a great many of the issues which remain of concern to the modern student of the philosophy of logic and of metaphysics, and his treatment of these issues is often very profound; indeed in some instances it is the most searching to be found anywhere. And if many of the topics which interested Mill have not gone out of date, neither has the essential spirit of his approach to them (whatever may be said about its details) become outmoded. As everyone knows, Mill was the quintessential empiricist, and while many people prefer their empiricism in a more muted form than his, some twentieth century philosophers of great eminence, such as W.V. Quine and John Anderson, have adopted species of empiricist theory hardly

less radical and thoroughgoing than the Millian variety. Even where the psychological theories which Mill saw as adjuncts to his empiricist views are rejected, his motivations can seem as fresh and attractive as ever. In a letter of 1854 to Theodor Gomperz (who translated the Logic into German), Mill spoke of his intention to develop a philosophy which would succeed in 'placing metaphysics and moral science on a basis of analysed experience, in opposition to the theory of innate principles' (LL, p.239). Elsewhere he wrote of his desire to press the defenders of a priori knowledge as hard as possible, and to drive them even from 'ground on which they had previously been deemed unassailable,' by showing that it is properly 'experience and association' which explain 'that peculiar character of what are called necessary truths, which is adduced as proof that their evidence must come from a deeper source than experience' (AU, p.233). These motivations are shared, in greater or lesser degree, by many modern philosophers in search of a theory able, in Crispin Wright's words, to 'liberate us from the mysterious aura which seems to envelop the traditional notion of necessity' (Wright, p.318). Neither Mill's problems nor his responses to them are without significant parallels in the work of contemporary philosophers.

An important motif of the present essay is that Mill's philosophy is far less damaged than one might have expected it would be by its inclusion of such archaic features as the identification of formal logic with the logic of the syllogism, and the postulation of a psychology of association. Like many great philosophers, Mill possessed the ability to transcend the limitations of false or inadequate theories he had inherited from his predecessors, and to penetrate through them to major new insights. Even the inconsistencies of detail which his views sometimes contain (though the often heard allegation that he was an unusually inconsistent philosopher is exaggerated)<sup>3</sup> testify to a faculty of invention which saved him from a too hidebound adherence to theories bequeathed him by his father and other early intellectual mentors such as Bentham. The most fundamental springs of Mill's thought are in any case a set of motives and beliefs which are sustained with great constancy and resolution, and whose appeal is felt anew by kindred spirits in every fresh generation of philosophers. While certain elements of Mill's thinking have, it is true, taken their final bow from the philosophical stage some time ago, it would be quite wrong to suppose that he has no longer anything interesting to say to us.

The truth is that J.S. Mill is the greatest philosopher to have attempted to develop an empiricist view of knowledge and reality to the point at which all rival conceptions are completely excluded from the field. His is a wholly unmitigated empiricism, reminiscent indeed in many respects of eighteenth century empiricisms such as Locke's, but more far-reaching (Mill would have no truck, for instance, with Locke's qualification to empiricism that mathematical knowledge is certain because it arises from a kind of infallible contemplation of mental archetypes rather than the ordinary objects of experience (Locke, vol.2, pp.168-69).)<sup>4</sup> Possibly Mill was hardly aware of the extent of his own radicalness. At any rate, he described himself as a follower of what he called the dominant eighteenth century theory of knowledge, namely:

that proclaimed by Locke, and commonly attributed to Aristotle - that all knowledge consists of generalizations from experience. Of nature, or anything whatever external to ourselves, we know, according to this theory, nothing, except the facts which present themselves to our senses, and such other facts as may, by analogy, be inferred from these. There is no knowledge a priori; no truths cognizable by the mind's inward light, and grounded on intuitive evidence. Sensation, and the mind's consciousness of its own acts, are not only the exclusive sources, but the sole materials of our knowledge (CO, p.125).

This is empiricism with a vengeance. Moreover, it is empiricism with a special, though arguably natural, twist towards a strongly reductionist metaphysics of the idealist or phenomenalist variety: Mill is saying not just that all knowledge comes through sensation and reflection on sensation, but also that all knowledge is knowledge of sensation and reflection on sensation. Mill's leaning towards idealism, and his enthusiasm for the philosophy of Berkeley, impart a flavour to his empiricism which is likely to be uncongenial to many otherwise well disposed to views of an empiricist type. To what extent the idealist strain in Mill is detachable from his general empiricist stance is a question of some complexity which will occupy us by and by; for the time being it is sufficient to remark that the fact that Mill moves from empiricism into idealism may reasonably make us wonder whether there is not some very basic kinship - to express the point rather loosely for now - between these positions.

At the very deepest level of Mill's philosophical motivations is a profound incredulity about the notion of a priori knowledge. 5 Yet it is difficult to find anywhere in his writings any really direct argumentation against the a priorist claim that there can be, and is, a priori or intuitive knowledge. To be sure, Mill has on hand an alternative account of knowledge to offer which, rooting all knowledge in sensation, makes no use of a priori faculties; but an alternative to a theory is not the same as a refutation of it. Nor is a theory falsified by showing that unfortunate or undesirable political or social consequences follow from taking it to be true, as Mill argues that a belief in knowledge by intuition is

in these times, the great intellectual support of false doctrines and bad institutions. By the aid of this theory, every inveterate belief and every intense feeling, of which the origin is not remembered, is enabled to dispense with the obligation of justifying itself by reason, and is erected into its own all-sufficient voucher and justification (AU, p.233).

Perhaps so; but if this provides a motive for wanting the 'intuitionist philosophy' to be false, it does not justify believing it to be so - though it should be noted that Mill never claimed that it did. The fact is that Mill's opposition to a priorism is itself based on something uncomfortably close to the kind of intuition which he constantly derides. What redeems his position, though, luckily for him, is that he can at least point to the absence in a priorist accounts of any really clear and precise explanation of how the mind is capable of attaining knowledge by a priori means; and if this is something less than a direct refutation of a priorism, it does entitle him, being armed with a detailed alternative theory, to protest that the onus of proof now comes to rest on his opponents. He complains:

We see no ground for believing that anything can be the object of our knowledge except our experience, and what can be inferred from experience by the analogies of experience itself; nor that there is any idea, feeling, or power in the human mind, which, in order to account for it, requires that its origin should be referred to any other source (CO, pp. 128-29).

Empiricism being, in Mill's opinion, much less mysterious than the doctrine of the school of intuition, it is up to the a priorists to prove the inadequacy of empiricist theory, and to establish the



need for their own.

To sustain his position against the a priorists, Mill considered that he required a theory with two complementary parts, corresponding to the two modes in which, in his view, knowledge is attained. 'Truths,' he wrote in the Introduction to the Logic, 'are known to us in two ways: some are known directly, and of themselves; some through the medium of other truths. The former are the subject of Intuition, or Consciousness; the latter, of Inference' (SL, p.6). (Mill's word 'Intuition,' incidentally, is misleading - he does not here mean a faculty of a priori apprehension, but simply of sensation, as the context makes abundantly clear.) To place empiricism on an impregnable footing, it needed to be shown that the knowledge which a priorists claimed was achieved by the exercise of pure consciousness was actually attained by inference from a basis of sensations. Accordingly, this meant showing that a priorism was untenable (in Mill's terminology) in both the fields of 'Metaphysics' and of 'Logic,' the former being concerned with determining 'what part of the furniture of the mind belongs to it originally' (as distinct from by inference) (SL, p.8), and the latter dealing with the conditions of valid inference of new knowledge from those truths we know directly. What Mill aimed to show was that the only immediate knowledge we possess is knowledge of our sensations, and that these are the sole basis from which all our other knowledge is, by inference, derived. If a sufficiently powerful system of logic could be delineated, it would become evident that it was theoretically gratuitous to postulate, as Coleridge and others had done, a pure a priori origin for a whole host of truths, including 'the fundamental doctrines of religion and morals, the principles of mathematics, and the ultimate laws even of physical nature' (CO, p.126). A well constructed science of logic, coupled with a cogent, reasoned account of the sensational basis, would, Mill trusted, establish to the satisfaction of those who approached the matter without prejudice that an empiricist philosophy was wholly adequate both to explain and to justify the structure of human knowledge.

The significance of the System of Logic needs to be assessed in the light of this broad purpose of vindicating an empiricist theory of knowledge. To some extent, the title of the work is misleading, as it can disguise the very heavy epistemological orientation it possesses. Still, the book is not intended to present a complete theory of knowledge; Mill's concern in the Logic is to study the attainment

of new knowledge by inference, and he largely disregards in it questions about the nature of our original data. As he said in a letter to John Sterling in 1839, when work on the book was in progress:

I have endeavoured to keep clear so far as possible of the controversy respecting the perception of the highest Realities by direct intuition, confining Logic to the laws of the investigation of truth by means of extrinsic evidence whether ratiocinative or inductive (EL, p.406).

However, in other respects the Logic did join battle with the a priorist position, most notably in the extended argument in Book II for an experiential basis for our knowledge of mathematical propositions. But only in the critique of Hamilton, written several years later, did Mill reveal in the fullest way the extent of his empiricist sympathies, and produce his most general and uncompromising strictures on a priorism. He clearly presumed that a great deal of what he said in the Logic would go down well even with those not well disposed to empiricism; 'Logic,' he wrote hopefully in the Introduction to that work, 'is common ground on which the partisans of Hartley and of Reid, of Locke and of Kant, may meet and join hands' (SL, p.14). In so far as empiricists and a priorists need not be at variance over the generalised conditions of sound deductive and inductive arguments, that is perfectly true of course. But while by no means everything in the Logic is aimed at the direct confutation of a priorist views, the overall purpose of the book was nevertheless, as Mill later publicly admitted, to provide 'a text-book of the opposite doctrine - that which derives all knowledge from experience' (AU, loc. cit.).<sup>6</sup> If it is not on every page taking issue with a priorism, certainly on no page does it make the slightest concessions to that view.

A proper apprehension of the primary concern of the Logic to contribute the theory of inference to the program of empiricist epistemology can save us from disappointment that it does not give us things we ought never to have expected it would. When Russell complained that only in his treatment of inductive inference was Mill more than 'perfunctory and conventional' he failed to see that Mill was not intending to provide some highly technical account of formal logical techniques. What Mill was trying to do - and what, I shall argue, he did in a very insightful way - was to investigate how in principle deductive and inductive modes of inference could produce new knowledge, and to establish the respective contribution of each mode to the

furtherance, specifically, of scientific knowledge.<sup>7</sup> It was therefore of much less importance to Mill to present a fully articulated survey of Aristotelian deductive logic - still less to attempt to refine that system of logic - than to probe deeply into some of the most fundamental questions in the philosophy of deduction, such as how, in principle, deductive inference can be productive of new knowledge, and whether it is possible to avoid the fallacy of petitio principii apparently present in every deductive proof. It is, perhaps, tempting to think that had Mill been sympathetic to the efforts of the early symbolic logicians he might have achieved even greater profundity in his philosophical speculations on deductive logic; but the important issue is how much he actually did achieve, not what he might have done in other circumstances. In any case, as Russell himself had to admit, the Logic's treatment of inductive methods of inference, which Mill considered more important than deductive methods in the pursuit of knowledge, is extremely comprehensive and detailed as well as being philosophically stimulating.

If the chief purpose of the Logic is to investigate how inference serves the pursuit of knowledge, that of the Examination of Sir William Hamilton's Philosophy is the completion of the empiricist program by proving that it is from a sensational basis that knowledge arises. The later book is a far more openly polemical work than the earlier one, for Mill felt by the 1860s that the time had come for a 'hand to hand fight' between the philosophies of experience and of intuition (AU, p.270). Whereas the Logic is frequently eirenic in tone, the Examination is persistently combative. For Mill, the magisterial figure of Sir William Hamilton (1788-1856), Professor of Logic and Metaphysics at Edinburgh from 1836 to his death, represented the embodiment of the views of the school of intuition. Mill described the man as 'the great fortress of the intuitional philosophy in this country' (ibid.), and his thought as 'representative of the best form of Germanism' (LL, p.763). Hamilton's quite extraordinary erudition (he was probably the most learned English-speaking philosopher of his own, and possibly of any century) had an almost mesmeric effect on his contemporaries, and before Mill's blistering attack his philosophy had attracted very little significant adverse criticism. The book broke the spell which Hamilton had cast over a whole intellectual generation, and Mill was able to show how the older philosopher's thought was riddled with inconsistencies. Mill felt able to comment by the early '70s: 'On the whole the book has done its work: it

has shown the weak side of Sir W. Hamilton, and reduced his too great philosophical reputation within more moderate bounds' (AU, p.271).

An important key to the Examination, and indeed to Mill's whole understanding of the nature of knowledge and reality, is a principle which, after Hamilton, he termed that of the 'relativity of human knowledge.'<sup>8</sup> This principle, whose precise interpretation and role in Mill's philosophy will be the subject of a later chapter of this essay, had already appeared, though not under that label, in his 1840 essay on Coleridge, from which we have already quoted a version of it, and a little later in the Logic, where he summed it up succinctly as holding that 'of the outward world, we know and can know absolutely nothing, except the sensations which we experience from it' (SL, p.62). The principle asserts that all our knowledge of an outer reality is knowledge of sensations (this is what is intended by saying that such knowledge is 'relative to' sensations), and Mill understood this to contradict the notion that we can have any knowledge of external objects, if these are construed as things in themselves which are irreducible to the phenomenal presentations of sense. In fact, Mill normally treated the relativity principle as applicable not just to outer but also to inner experience (that is, experience of the self and its states), in which broader form it can be used to support the denial that the mind or self consists in anything irreducible to its own conscious states. But while he explicitly regarded the relativity principle as excluding our knowing anything about putative entities, such as noumenal bodies or egos, of an experience-transcending sort, it is actually possible that he saw it, more broadly still, as the principle which excludes our possessing a priori knowledge about mathematics and science, religion and morality, which philosophers of the 'intuitionist school' assert that we have. For in his discussions of a priori knowledge, it is precisely the claim that the mind's only real knowledge is of sensational experience, and what can be inferred from this, which is constantly aired in disproof of the existence of knowledge from a priori sources; and it is this claim which is made in the explicit formulations of the relativity principle, though they are directed at the more specific target of clarifying the nature of the objects of outer and inner experience. On the broadest possible construal of it, therefore, the relativity principle can be considered not merely as supporting Mill's very stripped-down view of the objects of our experience, but as the deepest and most resonant doctrine of his empiricist philosophy.

Mill's doctrine of the relativity of knowledge could easily be employed in support of an idealist world view; for if in outer experience we know only our sensations, then it is unclear with what right we could uphold the existence of a world of physical objects not reducible to sensations. (Acceptance of an idealist point of view forces a reconstrual of the notion of 'outer experience' of course, but this is not - as Mill forcibly argued to Herbert Spencer (LL, p.1090) - in itself an argument against idealism.) Oddly enough, as we shall see below in Chapter Eight, Mill was by no means unreservedly committed to idealism, though he admired Berkeley's philosophy immensely.<sup>9</sup> Perhaps certain vaguenesses in some of his various formulations of the relativity principle prevented his being quite clear about the appropriate metaphysical views to associate with his relativist epistemology. It may be significant, too, that Mill was not by nature inclined to scepticism, and had no ambition to produce philosophical theories which common sense would frown upon. (In this connection it is interesting to note that he was seemingly quite unmoved by Hume's philosophy, and that extensive though his writings are, they make very few references to Hume, or indeed to any other sceptical philosophers.)<sup>10</sup> While Mill was always keen to resist what he saw as illicit claims to knowledge, as offered, for instance, by a priorists, he was not inclined to disbelieve in the possibility of knowledge. He believed, presumably, that a carefully constructed system of knowledge on empiricist principles would lack vulnerable points at which a sceptic could attack: by remaining metaphysically abstemious, it would be offering no hostages to fortune. Yet we shall see later how Mill was undecided about just how abstemious an ontological theory should be to remain consistent with the relativity principle.

Every man has a love of his own opinions, but Mill's dislike of unfounded pretensions to knowledge led him to take criticisms of his own arguments very seriously; later editions of his major works are strewn with footnote discussions of objections made to points in earlier ones. Mill was candid enough not to cling obstinately to positions which others had shown him to be untenable. Especially noteworthy in this regard is his readiness to acknowledge the drawbacks of the associationist psychology which was an intellectual inheritance from his father. Associationism appeared to provide just what the keen empiricist required, a comprehensive theory of the workings of the mind which posited a natural attraction among simple

mental contents in order to explain the formation of complex conceptions and beliefs. In completely eschewing any reference to a priori faculties while yet purporting to explain, in an a posteriori manner, the full range of human ideas and beliefs, associationism promised to add conviction to empiricism by challenging any uneasy suspicion that a purely empiricist theory would prove inadequate to accounting for all that we know or believe. Mill was fully aware of the advantages to be gained from supporting empiricism by associationist psychology, and in an essay entitled 'Bain's Psychology' of 1859 he noted that the relativity principle had been thought by some to be able to dispense with direct proof so long as it could rest on the 'general evidence' of associationism (BP, p.343).

A common view is that Mill never deviated from associationism, and that it formed a determining feature of his philosophy. John Passmore, for instance, has said that 'if, at any point, Mill's philosophical reasonings threaten what he regards as the foundations of empiricism or bring into question the adequacy of associationism, his recoil is immediate, at whatever cost to consistency' (Passmore, p.15). And Richard Wollheim, in commenting on the empiricists' need to explain how individual mental contents become linked together, lumps John Stuart with James Mill (and Hume) in holding that the trick is worked by 'inference':

Their treatment of [inference] takes the form of trying to explain the multiplicity of human argument by appeal to certain simple and rigorous laws describing the succession of ideas in the human mind: for every time the mind moves from premiss to conclusion, this is a case of one set of ideas following upon and ousting another. In the formation of these laws, the Empiricists once more resort to the principle or principles of Association (Wollheim, p.23). <sup>11</sup>

True enough, perhaps, about James Mill, but certainly not about his son. The younger Mill was sufficiently clear sighted to realise, and honest enough to admit, that associationism created severe embarrassments to anyone wanting to preserve a distinction between a movement of thought which is simply compulsive or automatic, and a rational inference. Mill's unhappiness about the tendency of associationism to collapse this distinction arose, characteristically, out of an empirical observation: he noticed that a belief set up by association can often be rejected on the basis of rational considerations, and that even in the case of the strongest associations, 'a

mind exercised in abstract speculation can reject the belief, though unable to get over the association' (BP, p.368). But this admission of a faculty which thus 'subdues belief into subordination and due proportion to evidence' (BP, p.370), threatens to complicate Mill's philosophy exceedingly - a fact of which he was not unaware. Later in this study we shall explore in depth the implications of this lapse from the official doctrine of the 'school of experience.' It will be seen that Mill is drawn towards two different and conflicting forms of empiricist view, the more radical one of which has strong links with metaphysical positions of an idealist kind, while the other is much closer to a form of scientific realism. On this interpretation, Mill's philosophy will be seen to have a great geological fault running through it - and a fault, remarkably, of which he seems to have been only intermittently, and then very imperfectly, conscious. Associationism helps to articulate (though without being its chief supporting principle) one only of these conflicting strands of thought.

Mill's failure to come to terms with this deep cleavage in his empiricism can provide some important lessons for contemporary empiricist theories. What is at issue, as will become obvious later, is no mere shallow inconsistency resulting from muddled thinking, but a serious problem of principle about the best way to develop an empiricist position. Mill's oscillation between two incompatible views is thus a fruitful inconsistency able to generate interesting further speculation. Not all his inconsistencies are as illuminating as this one, unfortunately. He has always suffered, and more than most other major philosophers, from accusations that his work is rife with inconsistencies, and while a great many of these accusations are demonstrably based on careless interpretation, it has to be admitted that he sometimes displayed an irritating tendency to drift between different and not wholly compatible formulations of an idea. There are perhaps two main reasons for this failing. First of all, he composed most of his works at very great speed. His total output of books, reviews, essays and letters is enormous (it will fill over thirty large volumes in the definitive Toronto University Press edition), and given the pace of production it is inevitable that his writings sometimes display flaws which might have been avoided had he worked more slowly and deliberately. A clue to a second, rather different reason emerges from a complaint he made of Bentham. 'He could not bear,' Mill remarked, 'for the sake of clearness and the reader's ease, to say, as ordinary men are content to do, a little more than the truth in one sentence, and correct it in the next' (BE, p.114). Bentham was in the

habit of employing very complex grammatical constructions in order to get all the truth into one sentence, and to make sure that that truth was precisely expressed. Mill's complaint will probably strike most twentieth century philosophers, brought up as they are to value exactitude above the more superficial virtue of an easy style, as a somewhat unprofessional one. If Mill himself thought it right to emulate the 'ordinary man,' and valued readability more than rigorous consistency, that explains at once his own exceptional fluency of style and his occasional lapses into inconsistency or confusing looseness of phrasing; it also explains why, in reading him, one often has the feeling that one has grasped his meaning straightway - until one stops to reflect about it, on which doubt sets in. In a subject wherein great issues can often hang on the making of fine distinctions, Mill's preference for a lucid but loose style is unwise and inappropriate, and his serious readers must regret it. <sup>12</sup>

Despite the slackness of statement which one often encounters in Mill's writing, his works on logical and metaphysical themes contain a multitude of ideas and inspirations which remain of the greatest interest. The present essay does not attempt to be a comprehensive survey of Mill's doctrines in these areas, which would require a far longer work. Its concern - which has been indicated in the preceding pages - will be with the manner in which Mill, always consistently with empiricism, accounts for the attainment of knowledge via inference, and with his empiricist treatment of certain other fundamental issues in the philosophy of logic and epistemology; and it will be shown how his views on these topics are related to his account of the nature of reality. There will be no attempt to provide a general treatment of his philosophy of natural and social science, and certain metaphysical questions with which he was much involved, such as the free will problem and (at the end of his life) the existence of God, will not be dealt with.

One further issue which will be absent from these pages is that of the bearing of Mill's theories in logic and metaphysics on his views about social and political issues. It has often been noted that Mill's empiricism is far from being a doctrine with consequences solely for logic and metaphysics. For Mill, empiricism represented an option with immense implications for theorising about politics and society. To admit the possibility of a priori sources of knowledge was, in his opinion, to open the door to all manner of claims that this or that (usually strongly conservative) view about morals or



religion or the state of society did not require to be warranted by experience but was instead intuitively obvious. It is therefore perfectly correct to consider that Mill hoped that the defence of empiricism in the Logic and the Examination would, by exhibiting the superiority of that doctrine over its a priorist rival, assist the political campaign against the forces of reaction; the difference between the schools of Intuition and Experience, wrote Mill in his Autobiography, 'is not a mere matter of abstract speculation; it is full of practical consequences, and lies at the foundation of all the greatest differences of practical opinion in an age of progress' (AU, p.269). Nevertheless, it is to fall into a serious misunderstanding of the logical and metaphysical writings to suppose, as some critics have done, that Mill's primary motive in composing them was to supply ammunition for the political cause. This interpretation of those works subtly disparages both them and their author, for it insinuates that under the guise of an academic and disinterested investigation of their ostensible objects of concern, Mill's real purpose was to concoct an elaborate battery of theories to employ against his political opponents. There would be nothing much amiss, it is true, in utilising general arguments against a priorism in the pursuit of political objectives where they are found to be relevant to the purpose. But the suggestion made by some of Mill's commentators is that the doctrines of the Logic and the Examination are moulded not so much by properly logical and metaphysical considerations, as by the exigencies of finding persuasive props for political positions.

Thus R.P. Anschutz, whose book on Mill has been much read, said of him: 'He never wrote anything on any subject without considering its bearing on the politics of the day,' and added: 'As war is sometimes said to be an extension of policy, so philosophy for Mill was an extension of politics' (Anschutz (1953), pp.61, 62). In similar vein, Passmore, after commenting that Mill's empiricism 'is more than an epistemological analysis; not to be an empiricist is to adhere to 'the Establishment' - to be committed to the protection of 'sacred' doctrines and institutions,' goes on to assert that it is for that reason that Mill refuses ever to allow any doubt to threaten the 'foundations of empiricism' or the 'adequacy of associationism' (Passmore, p.15). If Mill really proceeded in this manner, he was guilty of great disingenuousness. As a third instance, Ernest Nagel judged that 'even [Mill's] more technical theoretical analyses were controlled by the aim of removing the obstacles which false philosophies placed in

the path of social progress'; and he went so far as to assert that Mill had 'frankly acknowledged' that 'ulterior social objectives' were 'controlling the composition of the Logic' (Nagel (1950), pp. xv, xxxii).

But there is no good reason to suppose that the interpretation of Anschutz, Passmore and Nagel is correct. While Mill undoubtedly kept an eye open for possible bearings of his logical and metaphysical researches on his campaign against conservatism and obscurantism in the political arena, there is no basis for the allegation that the primary motives behind those researches were other than what they seemed to be - namely, desires to achieve correct theories about the logical or metaphysical issues under discussion; and Mill certainly never 'frankly acknowledged' that his governing motivation was a political one. In fact, in a letter written to Robert Barclay Fox in 1842, when he was hard at work on the Logic, he remarked that he had 'scarcely been thinking at all except on the two subjects I have just mentioned, Logic and the Romans. As for politics I have almost given up thinking on the subject' (EL, p.543). A strange observation for someone writing a book with an ulterior political motive! There is really a complete absence of evidence for the view, which is moreover initially quite implausible, that the Logic and the Examination were produced with the chief intention of supporting a political cause. As the onus of proof clearly bears on those wishing to uphold the interpretation at issue, and as that proof has not been provided, I shall proceed in this essay on the not very daring assumption that Mill discussed logical and metaphysical questions because he was interested in logic and metaphysics.

O N E

K N O W L E D G E    B Y    I N F E R E N C E

I

Early in A System of Logic Mill suggested that new knowledge is acquired in one or other of two manners. Some truths are known by 'immediate consciousness,' and whatever is known in that way 'is known beyond possibility of question' (SL, p.7). Truths about our 'bodily sensations and mental feelings' are knowable in this manner; Mill's examples are the propositions that I was vexed yesterday or that I am hungry today (ibid.). But the greater part of our knowledge, he thought, is acquired not in this immediate way, but rather by inference from other truths we already know. Inferentially obtained knowledge, furthermore, is not merely theoretically but also practically important to us. 'To draw inferences,' Mill reported approvingly, 'has been claimed to be the great business of life':

Every one has daily, hourly, and momentary need of ascertaining facts which he has not directly observed; not from any general purpose of adding to his stock of knowledge, but because the facts themselves are of importance to his interests or to his occupations (SL, p.9).

After distinguishing knowledge by inference from knowledge by 'immediate consciousness,' Mill felt that a definition of the province of logic could now be given:

Logic ... is the science of the operations of the understanding which are subservient to the estimation of evidence: both the process itself of advancing from known truths to unknown, and all other intellectual operations in so far as auxiliary to this (SL, p.12)..

The logician's concern, however, is not with the psychological description of reasoning processes, but only with the evaluation of inference as soundly or unsoundly carried out:

Logic has no interest in carrying the analysis beyond the point at which it becomes apparent whether the operations have in any individual case been rightly or wrongly performed (ibid.).

Mill's picture of knowledge is of a structure rooted in the data of immediate consciousness and extending upwards and outwards from those roots by inference. The logician's task is to assist both the ordinary man and the scientific reasoner in their quest for truth by providing a systematic account of the conditions under which inference is correctly carried out. As for the 'facts which are the objects of intuition or consciousness' rather than the products of inference, the logician need not worry himself about identifying and analysing those; that is a problem which can be left to 'another and a perfectly distinct department of science,' namely 'metaphysics' (SL, p.8).

At first sight, this is a neatly rounded account of the nature of logic. Its practical bias is obvious: Mill's primary concern in logic was with inference, which is what people engage in who want to know things, and he was interested in the logical relation of implication not as an end of inquiry in itself, but because he wanted to explain when inferences are sound. He would have taken no delight in the modern development of uninterpreted logical calculi and artificial languages which are of interest to the pure logician but which have no, or slight, practical application; such things would have seemed to him outré and pointless. On the other hand, he thought that the logician could not ignore questions of a semantic or an epistemological nature when they bear on the relation of thought and inference to reality. Thus he considered that the logician must pay attention to issues about term and proposition meaning, the nature of classes and kinds and the categories of existence, and also to facts about the epistemic capacities and limitations of human truth-seekers; the fact, for instance, that a finite human intelligence cannot survey an infinite, or an indefinitely large, class of cases to verify certain kinds of generalisation by direct inspection exerted a large influence, as we shall see later, on his theory of proof.

While Mill's conception of the province of logic is legitimate enough, his presentation of the contrast between knowledge by immediate consciousness and knowledge by inference is somewhat unclear. It is obvious that he did not think very carefully through the

question of what kind of 'immediate' knowledge would provide a suitable basis for inferential knowledge about outer reality. His examples of knowledge obtained via immediate consciousness concern subjective states such as being vexed or feeling hungry. Now it is true that I know that I am vexed or that I am hungry, if I am so, without needing to infer this from evidence (though it is not so clear, incidentally that Mill's example of knowing that I was vexed yesterday can be wholly non-inferential, for the temporal location of the sensation can be plausibly held to require determining inferentially). Such propositions about my subjective states (waiving problems about references to specific temporal locations) are what we might call, after Sydney Shoemaker, 'noncriterial,' being knowable by a primitive faculty of reflexive self-consciousness (Shoemaker, Ch.6). But it is evident that if all the products of immediate self-consciousness were of this kind, inference could not take us to knowledge of a reality beyond our subjective states: for conclusions about outer reality cannot be drawn, by any system of inference, however subtle, from premises solely about inner states. Presumably Mill never really intended to assert that all immediate consciousness is directed on states of the subject, but he forgot to say, though he must have believed, that we also have immediate knowledge of outer reality. His frequent references to our sensational awareness of 'objects' (for instance, when he is stating the principle of the relativity of knowledge) make it reasonable to suppose that he regarded as immediately known the kind of conceptually simple presentations of sense which later philosophers spoke of as expressible by 'sense-data' reports. Indeed, his description in the second chapter of the Examination of the sensory ingredients in the experience of seeing, handling and eating an orange reads very similarly to the kinds of sense-data analyses which early twentieth century philosophers were fond of producing (EH, pp.5-6). Mill is explicitly describing what the senses tell us immediately, and without the aid of inference, about the orange; and it is likely that he really intended to draw the same distinction between immediate and inferential knowledge in the Logic, but misstated it.

Mill's examples of 'truths which we know only by way of inference' are 'occurrences which took place while we were absent, the events recorded in history, or the theorems of mathematics' (SL, p.7). In the first two cases, our inference proceeds from 'the testimony adduced, or from the traces of those past occurrences which still exist,' in the last, from the definitions and axioms of the science. He also

observed that the sphere of inference may be wider than we might initially suppose; for instance, we may believe that it is by direct sensation that we know the distance of objects from us, whereas it is actually more likely that judgements of distance are inferences, with the eye providing no more than a 'variously coloured surface' (*ibid.*)<sup>1</sup> No wonder, then, that Mill stressed the practical importance of correct inference; without the ability to infer, a person could hardly form a view of reality at all. It is true that many important inferences are spontaneously made (inferences to the distances from us of things seen are a case in point), but some require a carefully controlled intellectual effort. In Mill's view, the function of logic is to assist us in correctly performing inferences of the latter type.

## II

Given the respect which is paid today to logical studies, it is hard to think oneself back to the situation in the earlier nineteenth century, when logic was a despised subject. Yet one can sympathise with those critics, particularly in the tradition of Locke, who looked on syllogistic formal logic as moribund, and doubted whether after two millenia it would yield any further real discoveries of either methodological or philosophical significance. Much though he admired Locke's thought, Mill dissented from him about the value of logical science. It seemed to Mill that logic can throw light on the manner in which inference enables us to increase our knowledge, and by doing so afford practical guidance to us in reasoning. A major inspiration on his early thinking about logic was Richard Whately's Elements of Logic, first published in 1826, which was the most philosophically adept study of the subject to be produced for many years. Mill reviewed the book for the Westminster Review in 1828, and his essay - which was his first publication on logic - was later fulsomely praised by his friend and protégé Alexander Bain as 'a landmark not merely in the history of [Mill's] own mind, but in the history of logic' (Bain (1882), p.36). Despite Bain's praise, this was not really a highly original article, and many of Mill's ideas on the philosophy of logic, while occasionally going deeper than Whately's, were directed - sometimes misdirected - by the older philosopher's work.

Mill wholly concurred with Whately's condemnation of the disdainful attitude to formal logic which Bacon, Locke and their followers had

made customary in British intellectual circles. To Whately and Mill, the dispraise which usually fell to logic's lot was especially ill-deserved and foolish because it was not accompanied by any alternative theory with pretensions to characterise the conditions of valid inference. Mill complained:

Had the philosophers who treated with so much contempt the idea of trying the validity of an argument by resolving it into a series of syllogisms, been aware that there is no other way in which its validity can be tried, and that this, and no other, is the process actually performed, so far as is necessary for the purpose, whenever a fallacy in argument is discovered and pointed out, they would probably have spared some portion of the ridicule which they have heaped upon the syllogistic theory (WE, p.10).

The reference here to resolving an argument into 'a series of syllogisms' testifies to Mill's adherence to the now obsolete view that deductive logic is coextensive with the logic of the syllogism; yet no one today would think of quarrelling with the claim that it is to logic that one should look for a description of the conditions of valid inference. If this claim is now a commonplace, the efforts of Mill and Whately have helped to make it so.

But if Whately and the young Mill were right about the importance of logical theory for providing standards by which the validity of reasonings could be assessed, they nonetheless exaggerated the scope of deductive methods in this connection. Enthusiastic to defend deductive reasoning against the attacks of the empiricist school, Whately went so far as to deny that the induction beloved of the empiricists was a form of inference at all; all genuine reasoning is syllogistic, he argued, while induction is simply a form of enquiry or investigation which turns up general statements which can then be employed as major premises in deductive syllogisms (Whately, Bk.IV.ch.i). The essence of induction, on this view, is 'the process of investigation and of collecting facts' (Whately, p.230), including, finally, general facts from which, with suitable minor premises, we can deduce new conclusions. The mistake here lies in thinking that there is no inference of a non-deductive kind involved in the derivation of general statements on the basis of the examination of individual instances of a kind. It is not objectionable to describe as 'induction' the empirical investigation of members of some kind for possession of a certain characteristic, for instance the investigation of swans

to establish their colour; but an inference of a non-deductive kind is involved in projecting from a sample of cases (e.g. white swans) to a generalisation about all members of the same kind ('All swans are white'). By the time he wrote the Logic, Mill had completely abandoned Whately's position, yet in his 1828 article he showed an unquestioning acceptance of the view that induction is not a form of inference, but merely of collection of data. 'The syllogistic logic,' he wrote, 'affords the only rules' which can contribute to 'the correctness of our reasoning':

It is, to use Dr. Whately's words, not an art of reasoning, but the art of reasoning ... Syllogistic reasoning is not a kind of reasoning, for all correct reasoning is syllogistic: and to reason by induction is a recommendation which implies as thorough a misconception of the meaning of the two words, as if the advice were, to observe by syllogism (WE, pp.14-15).

That there is a distinctive form of inference involved in induction, and that one can speak of an inductive logic, were, of course, facts perfectly familiar to the Mill of the System of Logic. Indeed, in the fifteen years separating the Whately review and the Logic, Mill departed from the Whatelyan viewpoint in an even more radical way, by coming to doubt whether the syllogism was really a form of inference at all! Yet, as we shall see, while Mill was eventually to reverse completely Whately's view of the status of deduction and induction, he did so as a consequence of a train of philosophical reflection for whose inspiration he was indebted to Whately's book.

The beginnings of Mill's train of thought lay in pondering on Whately's query how genuine epistemic advance is produced by inference. Regarding Whately's answer as unsatisfactory, but failing to find a better explanation of how we can increase our knowledge by the use of deduction, Mill finally felt obliged to conclude that the only genuine inference must be inductive. There is a long and complex story behind Mill's shifting opinions about deduction. The scene for its opening was set by Whately's attempts to respond to Locke's objections to syllogistic logic. Locke had claimed that syllogistic reasoning 'discovers no proofs, but is the art of marshalling and ranging the old ones we have already.' He had continued sarcastically:

Syllogism, at best, is but the art of fencing with the little knowledge we have, without making any addition to it. And if a man should employ his reason all this



way, he will not do much otherwise than he who, having got some iron out of the bowels of the earth, should have it beaten all up into swords and put it into his servants' hands to fence with and bang one another. ... And I am apt to think that he who shall employ all the force of his reason only in brandishing of sylogisms will discover very little of that mass of knowledge which lies yet concealed in the secret recesses of nature ... (Locke, vol.2, p.272).

Although Locke's criticisms were directed specifically at syll-ogistic reasoning, and as such have a large measure of cogency (for if reasoners were restricted to syllogistic methods alone, the amount of enlightenment they could expect from their inferences would be severely limited), they touch upon a deeper and much more general issue concerning the usefulness of deductive inference. In responding to the Lockean criticism of the syllogism, both Whately and Mill identify this deeper issue, which is a live one in the philosophy of logic even at this present day. In performing deductive inferences, we display in our conclusions the implications of our premises - and this whether the inferences are syllogistic or not. And sometimes we make enlightening discoveries in this way, turning up unexpected implications of premises we had already accepted. But how is it that we can find such processes to be illuminating? How is it that we can fully understand a set of premises and yet, by a deductive operation on them, obtain knowledge we did not have when we merely knew the premises? Why is deductive reasoning so often not merely a matter of fencing, as Locke alleges, with the knowledge we already have?

Whately's rejoinder to Locke began by making the important observation that deductive reasoning is often enlightening. He criticised Locke for not seeing that there is a distinction to be drawn between two kinds of discovery of truth. Firstly, there are 'such Truths as were, before they were discovered, absolutely unknown, being not implied by anything we previously knew, though we might perhaps suspect them as probable.' But in addition: 'That which may be elicited by reasoning, and consequently is implied in that which we already know, we assent to on that ground, and not from observation or testimony.' A teacher of mathematics, for instance, 'seems only to lead us to make use of our own stores, and point out to us how much we had already admitted' (Whately, pp.243-44). 'While we might wonder how

Whately thought that syllogistic reasoning could accomplish so much, we can grant that it can be illuminating, by deduction:

to expand and unfold all the assertions wrapt up, as it were, and implied in those with which we set out, and to bring a person to perceive and acknowledge the full force of that which he has admitted; - to contemplate it in various points of view; - to admit in one shape what he has already admitted in another; - and to give up and disallow whatever is inconsistent with it (Whately, p.239).

As Mill realised, such an account is not really an explanation of how deductive reasoning may be productive of epistemic advance; but it is at least an improvement on Locke's view which denied that interesting discoveries even in the science of geometry are attained through 'common logic' (Locke, loc. cit.).<sup>2</sup> To recognise that deductive reasonings frequently are illuminating is undoubtedly a step in the right direction, yet it leaves the nature of epistemic advance via deduction still unclear. How is it illuminating 'to expand and unfold all the assertions wrapt up ... and implied in those with which we set out'? And what does it mean to bring someone to acknowledge, by dint of deductive reasoning, 'the full force' of 'that which he has already admitted'? - for if he has already admitted something, and understood what he admitted, how can it be that he has not ipso facto grasped its 'full force' without needing to engage in a subsequent passage of reasoning?

### III

In his review of the Elements of Logic, Mill sided with Whately's view that deductive reasoning can uncover 'new truths' (though a better label would be 'new knowledge'), but professed himself dissatisfied with Whately's characterisation of illuminating reasoning processes. Alan Ryan has wrongly accused Mill of being confused about the distinction drawn by Whately between two senses of 'new truth,' but Mill never in fact criticised deductive processes for being unable to produce new knowledge of the sort characteristic of perceptual or inductive processes (Ryan (1974), p.79).<sup>3</sup> Like Whately, he was impressed by the capacity of mathematical studies

to reveal, without any fresh empirical input, previously unknown truths, and he approvingly repeated the Whatelyan claim that:

reasoning does not enable us to discover truths which were not implied and contained in any thing previously known; but ... many truths, virtually involved in propositions which we have already assented to, might practically, unless elicited by a process of reasoning, have remained for ever as completely unknown, as if they did not result from the knowledge we previously possessed. Of this fact, the whole science of mathematics is a perpetual proof (WE, p.33).

The truths of geometry, he continued, are all 'in reality implied in the axioms and definitions,' but those 'elementary truths' would have remained 'barren' had we not utilised them as premises of inferences. The sciences of geometry and mechanics are thus the fruit of deductive reasoning, and if we had never reasoned:

mankind would, it is true, in a certain sense, have possessed these magnificent sciences, but no otherwise as the ore in an undiscovered mine is possessed by the owner of the ground wherein it lies (ibid.).

Deductive inference is, then, for Mill a process of mining for truths contained in what we already know, but which may remain long hidden and require great mental effort and resourcefulness to uncover.

(Mill's superb figure of speech resembles one of Frege's: the truths of mathematics, wrote Frege, are contained in a small number of 'primitive truths as in a kernel' (Frege (1979), pp.204-05).)

Mill's superior status as a philosopher shows in his remaining perplexed about this account of reasoning, which Whately had accepted with equanimity. How can we resolve the 'paradox,' wondered Mill, 'that mankind may correctly apprehend and fully assent to a general proposition, yet remain for ages ignorant of myriads of truths which are embodied in it' (WE, p.34)? Holding that deductive logic was the logic of the syllogism, Mill naturally but misguidedly conceived his puzzle as that of explaining how we can assent to a universal proposition and yet remain ignorant of its instances. But even without the mistaken emphasis on syllogism, there is a substance to the problem which Mill himself seems to have penetrated through to, as when he enquired in the Autobiography how the theorems of geometry could all be 'contained' in the definitions and axioms of the science, though these are 'so different in appearance' (AU, p.189). Mill was seeing

through the distorting glass of his syllogistic prejudice a general problem about deductive inference which has seemed quite genuine to a present day philosopher with a much more sophisticated understanding of the varieties of inference than Mill possessed. Michael Dummett has written that there appears to be a 'tension' between what we need to account for the legitimacy of deduction, and what we need to account for its usefulness. For a deductive inference to be legitimate, notes Dummett, 'the process of recognising the premisses as true must already have accomplished whatever is needed for the recognition of the truth of the conclusion' (Dummett (1978), p.297). But now it is puzzling how deducing the conclusion can provide us with new knowledge; for the satisfaction of the legitimacy condition is apparently at odds with the maintenance of the kind of epistemic gap between premises and conclusion which is necessary for deduction to be illuminating. Mill did not explain his problem in quite these terms, but it was in essence the same; like Dummett, he sensed that satisfaction of the formal conditions for the validity of an inference would seem to prevent that inference being capable of providing new knowledge. And yet, as in 1828 he was fully aware, deductive inference frequently does lead to epistemic advance.

#### IV

As Mill continued to reflect on the nature of deductive inference in the years following the composition of his review of Whately's Elements, he became increasingly doubtful that a satisfactory explanation could be given of how deductive inference can lead to new knowledge. The 'mist' which Whately and others had 'left hanging over the subject' (AU, loc. cit.) appeared thicker than ever, and he began to think that the problem was not soluble in the terms in which it had been set up. According to the Autobiography, it was a rereading of Dugald Stewart which supplied a clue to what seemed to him a better theory (ibid.), and from that point he abandoned the view that deduction is ever really responsible, by itself, for producing new knowledge, even in a science like geometry. Mill's radical and surprising view that deduction is not properly inference at all is expounded and defended in Bk.II.ch.iii of the Logic.

By his own account, Mill proceeded to write out the second Book

of the Logic immediately after gleaning from Stewart the hint as to how to develop the theory of syllogism (ibid.). But this Book possesses a very curious feature: while its third chapter presents the new theory of deduction as something Mill calls 'interpretation' rather than inference, the second chapter is devoted to the analysis of syllogistic inference! It is hard to see, on the face of it, why Mill bothered to write a chapter about syllogistic inference (or why he retained the chapter, if it was already written) once he had decided that there was really no such thing as deductive inference. This question becomes more pressing still once it is noted that one of Mill's major purposes in ch.ii is to refute the traditional view that the principle known as the Dictum de omni et nullo is the principle of syllogism, on the grounds that if this were its principle, syllogising certainly could not bring us to new knowledge; but instead of using this discussion to reinforce the claim that the syllogism is not properly a form of inference at all, he follows it by urging that a quite different principle should be taken as the principle of syllogistic reasoning.

Fortunately, this anomalous situation can be explained in a way which saves Mill from the charge of being grossly inconsistent. Despite his confusing language, his real objection to the Dictum de omni et nullo is that it misrepresents the semantic character of the propositions of a syllogism; and this objection by no means becomes redundant after the rejection of the conventional concept of syllogism as a form of inference. Even posterior to that rejection, there is, in Mill's view, a role for a 'principle of syllogism,' though its purpose is to characterise the semantic structure of the interrelating propositions of the syllogism, not to analyse it as an inference. Now it is likely that Mill was unwilling to risk puzzling the reader of his discussion of the Dictum by introducing, before he had the opportunity to develop it fully, his revolutionary idea that the syllogism was not a kind of inference. Therefore he presented his criticism of the Dictum in terms which the reader would readily understand, and raised some essentially semantic issues about the meaning of the propositions involved in a syllogism in a manner which gave no indication that a profound reappraisal of the significance of syllogistic processes was shortly to follow. However, the effect of such a strategy was merely to postpone the moment of perplexity; for the reader arriving at the ch.iii discussion of the syllogism as interpretation, not inference, would inevitably wonder retrospectively what Mill had been up to in

ch.ii. It would have been altogether better if Mill had supplied much clearer signposts to his intentions.

Mill's discussion of whether the Dictum is the principle of syllogism remains of some interest today as a topic in the philosophy of logic in so far as some deductive inferences - though, of course, not all, as Mill believed - are syllogistic in form. And we can read that discussion of the Dictum as a discussion of the principle of syllogistic inference (which is in any case what it ostensibly is!) even if we have no inclination to side with Mill's view that syllogising is not really inferring at all. With regard to the study of Mill's own philosophy of logic, ch.ii of the Logic is important as a stage in the development of his thinking about interlocking issues concerning inference, meaning, thought and epistemic advance. In the light of the perspective more clearly set out in ch.iii of the second Book, it is apparent that Mill's anxieties about how a legitimate syllogistic inference could be anything other than trivial had led him to an even more fundamental worry about whether syllogising could really be a worthwhile process of any kind. And it seemed to him that the answer to this deeper question must be no, if the semantic structure of a syllogism is characterised by the Dictum.

Although Whately had approved the claim of the Dictum to be the principle of informative syllogistic inference, Mill inclined rather to the view of Dugald Stewart that the Dictum was a very trivial proposition; consequently either, as Stewart maintained, the syllogism whose principle it was could only be a trivial affair, or, as Mill preferred to believe, the true character of syllogism could not be encapsulated in the Dictum. Following Thomas Reid, Stewart gave the Dictum in the form: 'Whatever is affirmed or denied of the whole genus, may be affirmed or denied of every species and individual belonging to it'; and he observed of it that, 'This is a principle of undoubted certainty, but of no great depth' (Stewart, vol.3, p.190; cf. Reid, p.699). Worse, an actual example of a reasoning in one of the Aristotelian syllogistic forms turns out to be nothing but 'some self-evident or identical puerility' (Stewart, vol.3, p.191). Mill accepted that syllogisms would indeed be utterly trivial affairs if the Dictum were their principle. The Dictum appeared to him to amount to no more than 'the identical proposition, that whatever is true of certain objects, is true of each of those objects'; and he contended that:

If all ratiocination were no more than the application of this maxim to particular cases, the syllogism would

indeed be, what it has so often been declared to be, solemn trifling. The dictum de omni is on a par with another truth, which in its time was also reckoned of great importance, 'Whatever is, is' (SL, p.175).

Later, in the Examination, he was to return to the attack, arguing that:

a doctrine which defined one of the two great processes of the discovery of truth as consisting of the operation of placing objects in a class and then finding them there, can never, I think, have really satisfied any competent thinker, however he may have acquiesced in it for want of a better (EH, p.391).

There would be no point in syllogising, thought Mill, if the Dictum were its principle, for as a trifling verbal manoeuvre it would be of no more use in the pursuit of knowledge than the traditionally distinguished forms of 'immediate inference,' such as the obversion and conversion of propositions, which he regarded as involving no more than the 'repetition of the same, or part of the same, assertion' (SL, p.158). But, unlike Stewart, he concluded from this that the Dictum could not provide the correct analysis of the content and relationship of the propositions of a syllogism.

In arguing that the Dictum is not the principle of syllogism, Mill reveals rather clearly the epistemic charge to his concept of inference. As we saw, inference is for Mill one of the two modes in which knowledge is attained, and he believed, further, that no operation on propositions was worthy to be termed inference unless it was capable of leading to new knowledge; in particular, he held that one should not speak of inference where a process produced a conclusion which was identical to a proposition in the premise set. The undefended but plausible assumption underlying this position is that if the conclusion is a 'new' proposition, then someone in suitable circumstances might be illuminated by deriving it from the premises. It is worth saying that Mill's notion of inference is close to popular ideas of what inference is all about, but it is not identical to that held by most modern logicians. The present day logician would be more likely to explain inference in terms of implication than in terms of the capacity to produce epistemic advance. That is, he would normally say that a correctly infers q from p where p logically implies q; so as p logically implies p, he would allow that we can correctly

talk of inferring p from itself, even though this obviously fails to satisfy the epistemic condition which Mill laid on inference. (To infer p from p is, of course, to make a very trivial inference - but on the standard modern view it is to make an inference nonetheless.)<sup>4</sup> In support of the modern outlook is the fact that we do not have a satisfactory criterion of propositional identity of the sort Mill required in order to distinguish between what was and what was not inference. A vivid illustration of this is provided in the contrast between the views of Mill and of a logician in many ways inspired by him, H.W.B. Joseph, on so-called 'immediate inference.' Mill argued that 'immediate inferences' are not really inferences, because 'The fact asserted in the conclusion is either the very same fact, or part of the fact, asserted in the original proposition' - and hence 'there is in the conclusion no new truth' (SL, p.160). Joseph, on the other hand, while accepting the Millian claim that it is not inference 'to repeat in fresh words our original statement,' held that in immediate inference we do derive a new proposition, by dint of altering the relation of the terms in the original premise: hence there is genuine inference here (Joseph, p.232). Such a dispute is tricky to settle; but the modern logician typically handles the notion of inference in a manner which enables him to avoid becoming embroiled in it.

Following Stewart and Reid very closely, Mill construed the Dictum (slightly incorrectly, as we shall see) as asserting 'That whatever can be affirmed (or denied) of a class, may be affirmed (or denied) of everything included in the class' (SL, p.174). Mill's substitution of 'class' for Stewart's 'genus' is merely a stylistic change; both words for both men in this connection simply meant 'collection.' The nub of Mill's objection to the Dictum, which explains why he thought that it could not be the 'principle' of syllogism, whether syllogism is inference or not, is that it fails to link in with the fact that our thought is not merely about things and collections of things, but is also about the properties or attributes which things have. General terms have a kind of meaning for which Mill borrowed the scholastic word 'connotation,' and explained as their implying possession of attributes (SL, Bk.I.ch.ii.sect.5).<sup>5</sup> A term like 'white,' for example, he held to denote all those things which are white, and to connote the attribute whiteness; the word 'white,' he explained, 'is not predicated of the attribute, but of the subjects, snow, &c.; but when we predicate it of them, we convey the meaning that the attribute whiteness belongs to them' (SL, p.31). The trouble with the Dictum was precisely that it ignored connotation, and in Mill's opinion this



disqualified it from being an adequate characterisation of the syllogistic process.

Mill believed that the Dictum had its natural basis in what he called the 'ultra-nominalism' of Hobbes and Condillac which, on his rendering of it, construed general terms as non-connotative class names, and subject-predicate propositions as having the function of arbitrarily assigning objects to classes (attributes or properties not being countenanced by the theory) (SL, Bk.I.ch.iv.sect.2,3; Bk.II.ch.ii.sect.2,3). The result of such doctrines, he contended, was that one took to thinking that 'the investigation of truth consist[s] entirely or partly in some kind of conjuration with ... names,' and that epistemic advance in deductive reasoning 'consists in the mere substitution of one set of arbitrary signs for another' (SL, pp.175-76). The Dictum, holding, in accordance with these nominalist views, that the minor premise of a syllogism asserts that something belongs to a class, and the major premise that that class is included in another class, takes the conclusion to affirm no more than that 'what was included in the lower class is included in the higher,' and thus that 'the classification is consistent with itself'; and this, Mill urged, is only acceptable if we believe that a sufficient account of the meaning of a proposition is that it 'refers something to, or excludes something from, a class' (SL, p.177). He continued:

Every proposition which conveys real information asserts a matter of fact, dependent on the laws of nature, and not on classification. It asserts that a given object does or does not possess a given attribute; or it asserts that two attributes, or sets of attributes, do or do not (constantly or occasionally) coexist. Since such is the purport of all propositions which convey any real knowledge, and since ratiocination is a mode of acquiring real knowledge, any theory of ratiocination which does not recognise this import of propositions, cannot, we may be sure, be the true one (ibid.).

Had classes been entities 'per se' (by which Mill appears to have meant, had they possessed some kind of transcendental reality in the manner of Plato's forms),<sup>6</sup> the Dictum would not, he conceded, have been in such a plight, for it would have expressed what he somewhat obscurely termed 'the intercommunity of nature' (SL, p.174), which would obtain if such transcendental realities existed. But since they do not, the Dictum, while not false, is quite unillumin-

ating as to the nature of the syllogistic process.

The Examination repeated the criticism of the Dictum, and introduced some new terminology in which to state it. Mill recalled that what Hamilton had called an 'intensive or Comprehensive' reading of a proposition construes the notion of the subject as containing that of the predicate, and while he rejected such readings on the ground that they wrongly interpret the predicate notion as being part of the meaning of the subject term, he adopted the label 'comprehensive' for that reading of a proposition which reveals the connotative significance of its general terms, and consequently the character of the thought that it conveys. To read a proposition 'in Extension,' on the other hand, is, according to Mill, to read it by an artificial principle of abstraction which ignores attributes in favour of classes, which are no more than their pale shadows:

To say, all men are bipeds, is merely to say, given the attributes of man, that of being a biped will be found along with them; which is the meaning in Comprehension.

... When I say, All men are bipeds, what has my assertion to do with the class biped as to its Extension?

Have I any concern with the remainder of the class, after Man is subtracted from it? I am thinking of no such matter, but only of the attribute two-footed, and am intending to predicate that (EH, p.340).

## V

If the foregoing criticism of the Dictum is read as criticism of the Dictum qua principle of syllogistic inference, it can be seen to involve a serious non-sequitur. Let it be granted for the sake of argument that propositional meaning cannot be fully analysed without reference to attributes (which is indeed a highly plausible thesis): still, it does not follow from this that an account of inference has to refer to attributes, as Mill claimed. Even if ascribing attributes to objects is conceptually prior to assigning objects to classes, this does not imply that it is not class relationships which are the most crucial thing for inference. My assigning Socrates to the class of men may be conceptually posterior to my ascribing to him the attributes of man (or, perhaps, the attribute of being a man),

but if I infer that he is mortal from the premises that he is a man and that men are mortal, the form of my argument, on the most straightforward construal of it, involves classifying Socrates as a man, and men as mortal beings, and so concluding that Socrates is a member of the class of mortal beings. To challenge this, Mill would need to do more than simply point to the fact that the propositions of a syllogism contain connotative terms; for that is just not incompatible with an extensional account of the structure of syllogistic inference. (This is not to deny that there can be syllogisms-in-intension, but it is to counter Mill's claim that actual reasonings are never syllogisms-in-extension.) Even if the importance of a syllogistic conclusion is that it is a newly established proposition to the effect that an individual object, or class of objects, possesses a certain attribute, it cannot be presumed that its derivation was non-extensional. If syllogistic reasoning can be most simply, but still adequately and validly, carried out without involving thought about attributes, there is no good reason why it should not be. It would certainly not be a sound objection to this to say that if extensional syllogising is a very simple process, then it is hard to see how it can ever be an illuminating one. The problem of how deduction is capable of leading to genuine epistemic advance remains in need of solution, but it would only be a fraudulent response to it to pretend that deductive reasonings are really more complex than they are. Given extensional syllogising as a possibility, there is no hope of finding an answer to the problem along these lines.

This rejoinder to Mill's objections to the Dictum as the principle of syllogism, while effective against the ipsissima verba of his discussion, needs to be reconsidered if his deeper intention was, as I have suggested, to deny that the Dictum correctly characterised the content and relations of the propositions of a syllogism considered as something other than an inference. If his underlying purpose was not to show that the Dictum was not the logical principle of syllogistic inference, but to establish that the semantic character of non-inferential syllogistic processes could not be captured by it, then what has so far been said is not sufficient to demonstrate the failure of his attempt. If syllogising, as Mill wanted to explain it, essentially involved thought about objects and their attributes, then it would indeed appear that the Dictum could not provide an adequate analysis of it. In fact, while Mill's positive theory of the syllogism, as we shall see in Chapter Three below, does make reference to attributes, it does not do so essentially: that is,

it would be possible to reconstruct the account in purely extensional terms without altering its basic thrust. And that being so, it cannot be said that the Dictum is incapable of serving as the principle of syllogism even on Mill's somewhat odd view of what syllogisms are; though on the other hand one might judge it not impermissible to prefer to it, as Mill did, a non-extensional alternative principle.

But there remains something unsatisfactory about Mill's method of objecting to the Dictum as trivial on the ground it does not mention attributes. Its not mentioning attributes might be objectionable if it is to be accounted as a principle about the meaning of the propositions of a syllogism regarded in the way Mill eventually wanted to regard it, that is, as a process of 'interpretation' rather than of inference (though, as I have hinted, an extensional interpretation of the syllogism seems perfectly possible even then). But on either the standard or the Millian view of what a syllogism is, it is hard to see why Mill should equate extensionality and triviality. It may be that he fell into the error described above of thinking that if syllogising were to involve thought about attributes, it would be a more arduous and thus more significant affair. Yet not only is the arduousness of a thought process not a guarantee of its significance; it is not at all clear that merely by admitting attributes would syllogistic thinking become more difficult. It will be recalled that Mill stated the Dictum in the form:

(D1) Whatever can be affirmed (or denied) of a class, may be affirmed (or denied) of everything included in the class.

But this principle can easily be rewritten to introduce a reference to attributes:

(D2) Whatever attributes can be affirmed (or denied) of a class, may be affirmed (or denied) of everything included in the class. The second version of the principle does not eliminate classes, but at least it does not suppress attributes, which was the nub of Mill's complaint against the first form of the Dictum. It is true that the mention of attributes in (D2) would not appeal to those who wish to preserve the Dictum in a purely extensional guise. But the point of present interest is that the introduction in (D2) of reference to attributes has scant tendency to make us feel that (D1) and (D2) differ in any marked way in respect of their obviousness; furthermore, it would appear less than even-handed to deny that (D2) was trivial while asserting that (D1) was.

The erroneousness of seeking for the profundity of thought in the presence in it of a concern with attributes can be further seen

if we reflect on a point which, for simplicity's sake, has been ignored in the discussion so far. Both (D1) and (D2) are actually misstated, and are even false as they stand. For certain affirmations (or denials) can be made about a class which cannot be made about its members individually, though this contradicts (D1) and (D2). For instance, I might correctly affirm about a certain class that it is ten-membered (or, in the terminology of (D2), that it has the attribute of being ten-membered), but it does not follow that each of its members is also ten-membered. To cope with this difficulty, (D1) and (D2) might be rewritten thus:

(D1') Whatever can be affirmed (or denied) individually of all the members of a class may be affirmed (or denied) of each individual included in it;

(D2') Whatever attributes can be affirmed (or denied) individually of all the members of a class, may be affirmed (or denied) of each individual included in it.

But these seem even more obvious than did the misstated versions (D1) and (D2); and again it is significant that the second principle, which mentions attributes, does not score over the first in respect of apparent profundity.

It is plausible to suggest that Mill betrayed a fundamental misunderstanding about what is required to vindicate syllogism as a useful thought process. What is needed for this purpose is not the identification of a principle of syllogism which is unobvious and profound, but rather the location of contexts of thought in which syllogising, trivial though it may seem when considered in abstraction from any setting, can play a valuable role. I shall argue in the following chapter that Mill, in spite of himself, did succeed in identifying a context of argument within which the syllogism, simple though its structure is, plays an important and indeed indispensable role in advancing knowledge.

## VI

Having weighed up the Dictum de omni et nullo and found it wanting, Mill proceeded to look for a non-extensional principle of syllogism. The principle he lighted on came, he suggested, in two versions, which he sanguinely hoped that 'the intelligent reader' would see

amounted to the same thing (SL, p.181). On the first version, the principle is (for syllogisms with affirmative major premises) that 'a thing which coexists with another thing, which other coexists with a third thing, also coexists with that third thing'; or (where the major premise is negative) that 'a thing which coexists with another thing, with which other a third does not coexist, is not coexistent with that third thing' (SL, p.178). On its second version the principle runs rather differently:

Whatever has any mark, has that which it is a mark of.

Or, when the minor premise as well as the major is universal, we may state it thus: Whatever is a mark of any mark, is a mark of that which this last is a mark of (SL, p.181).

Mill added that the second form of the principle was the more revealing, and in an important footnote inserted in the 1872 edition of the Logic he identified these 'axioms' with the principle traditionally expressed in the words: Nota notae est nota rei ipsius (SL, p.182).

Faint additional light is shed on these not very perspicuous formulae by some earlier remarks in the Logic about the semantics of propositions. In Bk.I.ch.vi Mill asserted that universal propositions can be looked on either as 'portions of speculative truth,' or alternatively as 'memoranda for practical use,' and he explained the distinction by saying that 'All men are mortal' can be read as affirming that 'the attributes of man are always accompanied by the attribute mortality,' or that 'the attributes of man are evidence of, are a mark of, mortality; an indication by which the presence of that attribute is made manifest' (SL, pp.116-17). 'These two forms of expression,' he insisted, 'are at bottom equivalent; but the one points the attention more directly to what a proposition means, the latter to the manner in which it is to be used' (SL, p.117). But he failed to clarify this distinction between meaning and use beyond saying that in reasoning it is the 'practical use' of propositions which is of greater significance (ibid.).

Some perplexing questions arise over Mill's two accounts of the meaning of universal propositions, and over the two versions of the principle of syllogism which stem from them. What precisely did he intend by his distinction between the meaning of a proposition and the manner in which it is used? On what basis did he believe that the meaning and use versions of the analysis of universal propositions,

or of the principle of syllogism, were equivalent - a claim which in neither case is prima facie plausible? And how did he hope to support the view, which initially seems out of the question, that 'All men are mortal' can be taken to affirm that manhood is evidence of mortality? Even if one allowed that something's being a man could be regarded as evidential of its being mortal, it does not seem to be this claim about evidence which 'All men are mortal' is making, but rather one about objects and attributes to the effect that if something is a man, then it is mortal (i.e. has the attribute of mortality). In fact, Mill's responses to these questions are nugatory.

Certainly he did not manage to sustain his claim that his versions of Nota notae represented an improvement on the Dictum as principles of syllogism. The first formula, that 'A thing which coexists with another thing, which other coexists with a third thing, also coexists with that third thing,' he presumably intended to be understood as a principle about attributes, in accordance with his first interpretation of the meaning of universal propositions. Alexander Bain in his own Logic stated the Nota notae principle, as Mill did, in terms of 'things,' but explicitly observed that the coexistence at issue was one of attributes (Bain (1895), p.157). But, as Bain pointed out, Nota notae understood this way is too clumsy to distinguish, as an adequate principle of syllogism should, between the 'total and partial coincidence of terms, the observation of which is the essential precaution in syllogizing' (*ibid.*; cf. Jackson (1941a), pp.72-73. The formula is far too hazy about matters of distribution which are critical in syllogistic reasoning, and blurs the important feature that the terms of a valid syllogistic argument do not have to be coextensive. Thus if I argue that Socrates is mortal from the premises that Socrates is a man and men are mortal, it is necessary to the validity of my inference that there should be no men who are not mortal, but it is indifferent whether there are any mortal beings who are not men - a feature not identified by Mill's formula which, if anything, gives a misleading impression that for the validity of the inference all mortal beings should be men. Mill responded to Bain in the 1872 edition of the Logic by remarking that this unclarity in the first statement of Nota notae would in practice be unlikely to lead anyone astray (SL, pp.181-82). This, however, by his own testimony must be an ignoratio elenchi, for he had said that the first statement of the principle was intended not as a guide to practice, but as a theoretical account of the 'ground of the legitimacy' of syllogisms, and as such it is unsuitably imprecise (SL, p.178).

Mill further commented that his second, or 'practical,' form of the Nota notae could hardly lead anyone astray in the manner envisaged by Bain; for:

No one would be in any danger of inferring that because a is a mark of b, b can never exist without a; that because being in a consumption is a mark of being about to die, no one dies who is not in a consumption (SL, p.182).

Maybe so; but there are other good reasons for doubting the adequacy of the second form of the principle. It has already been pointed out that it is not really plausible to read the proposition 'All men are mortal' as asserting that the attribute of manhood is evidential of the attribute of mortality (that is, in the terminology of 'marks,' that manhood is a 'mark' of mortality). But such an analysis is even more strikingly impossible in the case of many other propositions.

It will not do, as Mill himself was aware, for singular propositions. The contribution which 'Socrates is a man' makes in a syllogism cannot be rendered as 'Socrates is a mark of man'; so instead Mill construed it, with scant regard for consistency, as 'Socrates has the marks of man' (SL, p.180). And while he did not mention particular propositions in this context, a proposition like 'Some men are mortal' would have to be treated analogously to 'Socrates is mortal,' for it cannot be held to assert, or in any way imply, an evidential relationship between the attributes of manhood and of mortality (for if it did so, it would be incompatible - which it is not - with 'Some men are not mortal'). The chances thus come to seem remote that Mill's theory of propositional significance will provide any satisfactorily unified account of predication. But there is worse still in store. Mill's evidentialist interpretation of universal propositions cannot reasonably be applied even to all propositions of the form 'All Fs are G.' Such a proposition as 'All people in this room have black hair' is a specimen of a generalisation which, if it is true, is so accidentally only, and it is inadmissible to suppose it to assert that there is an evidential relation between being a person in this room and having black hair. Yet such a proposition can obviously stand as the major premise of a syllogism. Therefore what Mill describes as the 'general formula' of syllogism, namely:

Attribute A is a mark of attribute B,  
The given object has the mark A,  
therefore  
The given object has the attribute B



(ibid.), does not provide an analysis of the syllogism:

All people in this room have black hair,  
Charles is a person in this room,  
therefore  
Charles has black hair.

On the other hand, the Dictum supplies an accurate account of its structure. Mill's theory, then, cannot cope with major premises which are accidentally true and not lawlike propositions.

The failure of Mill's principle of syllogism can be seen from another angle too. Talk of evidence and marks sounds more appropriate in the context of inductive than of deductive argument, and we often speak of one proposition's being evidence for another, or of a thing's possessing some attribute as evidence for its possessing some other attribute, where we do not consider that the conclusions we draw from the evidence follow with deductive certainty. It might be, for instance, that a careful investigation has revealed that every time that an object has been observed to have the attribute A, it has also had the attribute B; and on this basis it is reasonable to say that possession of A is inductive, (though not conclusive) evidence for possessing B - which in more Millian language can be expressed by saying that A is a mark of B. Now the argument:

Attribute A is a mark of attribute B,  
The given object has the attribute A,  
therefore

The given object has the attribute B  
will, on these presuppositions, be a strong inductive argument, but it is not a deductive one as the premises could be true and the conclusion false. Yet this schema is just Mill's 'general formula' of syllogism again! That formula, then, fails to represent a deductive structure.

It would not help Mill to mend matters to specify that the major premise of a deductively valid syllogism has to express a wholly watertight evidential relation, such that one attribute is a mark of another only if where the former is found, the latter is never absent. This leaves Mill without a theory of the structure of syllogisms whose major premises express something other than exceptionless or lawlike connections of attributes. Moreover, the account still fails to characterise a deductive structure. There may be a law of nature relating two attributes which is so well attested that one may, with the utmost safety, be taken as a mark of the other, yet the schema:

Attribute A is a (wholly reliable) mark of the attribute B,  
The given object has the mark A,  
therefore

The given object has the attribute B  
characterises a limiting case of inductive argument still, and deductive arguments are not to be identified with such limiting cases. Inductive arguments (waiving Hume's objections to them for the present) may be ranged on a spectrum of strength, but a deductive argument is different in kind from even the strongest inductive argument, and only where an argument is deductive is it formally self-contradictory to accept the premises and reject the conclusion. It is worth remarking that the traditional understanding of the Nota notae principle was considerably different from Mill's, and that the problems with his account have little relevance for the evaluation of this non-extensional principle of deductive syllogistic inference as understood by Aristotle and later logicians.<sup>7</sup> As Mill interprets it, however, it quite fails to challenge in any serious way the Dictum's claim to provide the most perspicuous principle of the syllogistic process.

This verdict stands even when we recall that Mill ultimately meant to deny that syllogisms are genuine inferences. Regarded not as the principle of syllogistic inference, but rather of syllogism in the role of a process of 'interpretation,' Mill's laboured account of Nota notae still fails to give a plausible account of the significance and mutual relations of the propositions of a syllogism. His semantics of 'marks' provides no persuasive readings of syllogistic propositions, and we have seen that the proper place for the notion of marks, or evidence, is in the discussion of inductive reasoning. Yet it is interesting to note that Mill returns to the subject of marks when expounding his theory that real inference is always inductive in nature; and he there states the view that the role of syllogistic major premises is to serve as 'memoranda' of evidential relationships we have discovered to hold - e.g. between the attributes of men and the attribute of mortality (SL, Bk.II.ch.iii.sect.4). But although he speaks of using a proposition like 'All men are mortal' as a 'memorandum' that we have found the attributes of men to be a mark of the attribute of mortality, he refers no more to Nota notae, and stops short of saying that asserting that all men are mortal is asserting that such an evidential relation holds. In fact it is difficult to tell whether Mill has now abandoned his earlier view of Nota notae altogether, or whether he intends to preserve it (though in a guise

still further removed from that of its traditional acceptation) in the watered-down form of a principle not about the semantic significance of the propositions of a syllogism, but merely to the effect that universal propositions can be useful in summing up the tendencies of inductive investigations. Such a (weak) statement is no doubt unobjectionable, though we shall see that it can hardly be the whole truth about the function of universal propositions in the pursuit of knowledge. Furthermore, it is not even strictly necessary that the view of major propositions as memoranda rather than premises should be delivered in non-extensional terms. Although Mill fails to mention the fact, a universal proposition could be regarded as a record of the results of an inductive investigation in the form of a memorandum that all examined members of one class had been found to be members of another. And such a view would have the merit of avoiding altogether any taint of suspicion of being connected with a false evidentialist account of propositional significance.

T W O

PROBLEMS ABOUT PROOF  
AND IMPLICATION

I

Mill's dissatisfaction with the claims of the Dictum de omni et nullo to represent the structure of the syllogistic process arose from his conviction that an adequate principle of syllogism must mention attributes: whether or not to syllogise is to infer, it will, on his view, be a perfectly trivial thought process if it is concerned only with objects and classes. In the previous chapter I have argued that Mill's objections to the Dictum are misconceived and his proposed alternative non-extensional principle of syllogism unsatisfactory. But now we must turn, as Mill did after completing his discussion of the Dictum, to the question of whether syllogism is really a form of inference at all.

The notorious claim, in Bk.II.ch.iii of the Logic, that syllogism is not inference has had few defenders, and it may seem too obviously implausible to be worth discussing. Nevertheless, even unacceptable doctrines are sometimes based on considerations of intrinsic interest, and that is the case here. Mill felt forced into adopting this view of syllogism by his despair of being able to vindicate the claim that syllogistic processes can produce epistemic advance; and it will be recalled that for Mill, nothing was to be allowed the status of inference which did not further knowledge. It is true that if we did not insist on this necessary condition for inference, we could retain the notion of syllogising being a mode of inferring even if we thought, like Mill, that it was incapable of leading to new knowledge. But the deeper question Mill was raising does not turn on the definition of 'inference'; it is the question of whether (and if so, how) by syllogising we can advance in knowledge. Or rather, this was just the specific form in which Mill was addressing a more fundamental issue

still, namely whether deductive processes can be genuinely illuminating, and, if they can, what it is about them which enables them to be so.

In his 1828 review of Whately's Elements, Mill was convinced that syllogising did lead to new knowledge, but was puzzled about how it could do so, as it appeared to involve nothing more than a very straightforward unpacking of the content of premises already known to us. But by the date of the first edition of the Logic, he had abandoned the idea that such a process could actually be productive of any real illumination, and with it the notion that new knowledge could be the fruit of deduction. In one respect, however, Mill's despair can seem quite justified, given that his theory of deductive logic admitted only the limited repertoire of syllogistic methods. He believed that the relation between a set of premises and its consequences was always that which holds between a universal proposition and the instances it subsumes; thus it seemed surprising in the extreme that:

mankind may correctly apprehend and fully assent to a general proposition, yet remain for ages ignorant of myriads of truths which are embodied in it, and which, in fact, are but so many particular cases of that which, as a general truth, they have long known (WE, p.34).

This concept of the relationship between premises and consequences has long ago been discarded as a general account of deductive structures, but a pre-modern logician who held it certainly had some reason for doubt about the prospects of finding an explanation of how deduction could lead to the development of such sciences as geometry. Mill saw that a purely syllogistic logic could hardly be ascribed responsibility for the derivation of all the theorems which geometers have arrived at. One might wonder at this juncture whether it ever occurred to him to suspect that there might be some radical but reparable defect in his notion of deductive method, particularly as he had so resolutely asserted in 1828 that, 'All geometry is in reality implied in the axioms and definitions, and all mechanics in the three laws of motion, and that of the composition and resolution of forces' (WE, p.33). But whether or not it ever did, Mill finally failed to preserve the insight that theorems in geometry are the result of deduction (only not, or not at any rate exclusively, syllogistic deduction), and abandoned the idea that they were the product of deduction altogether. This was a false step; yet it may be that he partly felt driven to take it because he glimpsed, through the more specific problems of the

syllogism, a quite general problem of understanding how in principle deductive reasonings can bring enlightenment.

There was, in any case, another and a very important motivation behind his contention that syllogistic inference cannot advance knowledge. This was his conviction that every syllogistic argument designed to prove its conclusion inevitably commits a fallacy of petitio principii, or begging the question. In fact it is not quite correct to describe Mill as holding the petitio objection to syllogism to be another reason for disbelieving in the capacity of deductive reasoning to produce epistemic advance. Rather, he regarded the petitio complaint as simply a sharp way of presenting the objection that syllogistic methods are incapable of advancing knowledge. There is no mention of petitio in the review of Whately, although Whately's book actually discusses this objection to syllogism; apparently Mill in 1828 had not become impressed by it in the way he was to do so later on. Whatever he thought of the petitio objection in 1828 (if he thought of it at all), it was unfortunate that in the Logic he viewed it as in essence indistinguishable from the problem about new knowledge. I shall attempt to show that this was a mistake, and one which had serious consequences for his final view of the nature of syllogism and deduction. The ground on which he argued that every syllogistic argument intended as a proof of its conclusion commits a petitio is, properly considered, quite distinct from that which might make us wonder how it is that a deductive process can take us to interesting new knowledge. By confusing two different problems about deductive logic, Mill made it more difficult to see a way out of either.

The fact that Mill confused two different problems had the especially unfortunate consequence that it prevented him from seeing that to one of them - the problem about apparent syllogistic petitio - he had, without realising it, an answer to give, and an answer, moreover, superior to any of the others which have from time to time been offered in the defence of syllogism against the petitio charge! That he failed to draw out that answer properly and recognise it for what it was is due to his confusion of the petitio issue with the problem about informativeness to which he did not have an answer. Unsurprisingly, Mill's failure to realise that he could answer the petitio objection has effectively disguised from his commentators the fact that he had an answer. Mill's way out of the petitio problem, as we shall see, consisted in showing how even the most apparently vulnerable syllogistic proofs are in practice usually saved from begging the question by the nature of the contexts in which they occur.

Although Mill was not the first philosopher of note to take up the issue of whether syllogistic arguments to prove conclusions are inevitably question-begging, the extended and intriguing discussion in Bk.II.ch.iii of the Logic has with some justice become the locus classicus for later students of the problem. Sixteen centuries earlier the sceptic Sextus Empiricus had urged that every syllogistic proof commits a petitio (Sextus Empiricus, Bk.II, 195-97), but Mill was probably stimulated to address the issue by reading about it in Dugald Stewart; in fact both Stewart and Whately derived their own interest in it from the very articulate resurrection of the charge in George Campbell's Philosophy of Rhetoric of 1776. On the basis of the confusion to which I have referred, Mill felt obliged to concede that syllogisms qua proofs of their conclusions would indeed beg the question. Yet present also in his chapter is a second line of argument which, if it had been more sharply drawn into focus, would have brought him to realise that his concession was unjustified. In order to disentangle Mill's complex and difficult views, it is necessary first to return to his reflections on the issue of the informativeness of deduction.

## II

A well-known passage in Mill's Autobiography recalls his speculations on deduction in the period between the review of Whately and the first edition of the Logic:

I ... puzzled myself, like others before me, with the great paradox of the discovery of new truths by general reasoning. As little could it be doubted, that all reasoning is resolvable into syllogisms, and that in every syllogism the conclusion is actually contained and implied in the premises. How, being so contained and implied, it could be new truth, and how the theorems of geometry, so different in appearance from the definitions and axioms, could be all contained in these, was a difficulty which no one, I thought, had sufficiently felt, and which, at all events, no one had succeeded in clearing up (AU, p.189).

Whately and others, he continued, had offered explanations which gave 'a temporary satisfaction,' yet they 'left a mist still hanging over

the subject' (ibid.).

Mill's 'great paradox' is presented here in a subtle and penetrating way. Mill realised, as undoubtedly many other philosophers of logic have not, that the question 'How may deductive inference be productive of new knowledge?' is not really cleared up by saying - though it is quite correct to say - that deducing conclusions from premises is informative where those conclusions are, so to speak, hidden consequences of the premises. To reveal hitherto unknown consequences of a set of premises by deductive reasoning is indeed to advance knowledge by deduction; and to recognise this fact is, at one level, to have an answer to the question of how deduction can be informative. But Mill saw that to provide such an 'answer' is actually just to sharpen our focus on the original problem. Deductive reasoning reveals hidden consequences, and is thereby informative: but the question now outstanding is how consequences can be hidden in premises. How, for instance, as Mill asked, can all the theorems of geometry, 'so different in appearance from the definitions and axioms,' be all contained in these? To have a proper and satisfying explanation of how deductive inference can produce new knowledge, it is necessary to have an explanation of deduction's capacity to reveal previously unsuspected implications of premises. Mill's view in 1843 and after was that deductive reasoning only seems to reveal hidden consequences but does not really do so - a surprising view at first sight, but less so once its aetiology has been clarified. But as soon as he had adopted this line, Mill had to conclude that deduction could not be productive of new knowledge, could therefore not be (on his terms) a form of inference at all, and must thus be a process of some other, non-inferential kind.

The problem about hidden consequences arises out of a feature of the relationship between the premises and the conclusion of a valid deductive argument which Mill described by saying that the premises of such an argument contain and imply the conclusion. The root problem is: How is it that we can understand a set of premises and yet not know that it implies some proposition which it does imply? Or, in the idiom of containment (though this seems more appropriate in some cases than others): If the premises of valid deductive arguments contain their conclusions, then why are deductive inferences not so obvious that they do not really bring about an epistemic advance? It might seem that if we really understood a proposition or set of propositions, we would automatically recognise what is contained and



implied in it. Mill wanted to know how the science of geometry could take a long time to complete if all its theorems were contained and implied in axioms and definitions we feel we understand perfectly. A natural expectation would be that either the fruit of deductive reasoning would not be interesting new knowledge, but simply a repetition in a verbally different form of what was known when the premises were known; or, if the conclusion did represent an epistemic advance, it must have been obtained through means other than by deduction from premises containing and implying it. Mill eventually settled for the second of these alternatives, though both are misguided.

People sometimes use the idiom of containment when explaining the difference between deductive and inductive consequence (to wit, the premises of deductive arguments contain the conclusion, those of inductive arguments do not), or when attempting to account for the necessity of deductive inference (deductive inference is necessary because the conclusion is already contained in the premises, and only needs to be revealed). It is hard to deny that such talk does, at least initially, assist our intuitive grasp of the nature of deduction. Even the most highly sophisticated philosophers occasionally talk about the containment of conclusions in premises; we have seen that Frege spoke of the whole of mathematics being contained in a small number of primitive truths 'as in a kernel,' while Dummett appears to accept the notion of containment as being serviceable as a metaphor, if in need of elucidation (Dummett (1978), p.300). Further, the idiom seems defensible by reference to our common habit of talking of the content (i.e. informational content) of propositions. Roughly, the content of a proposition is what it means, what it can be used to assert; and it seems a natural extension from talking of a proposition's explicit content - what, so to speak, it is saying on the surface - to talk of its implicit content, which is still part of what it is saying, but not what it says openly, so that we need to employ inferential techniques to reveal it.

But talk of containment is not always equally appealing. It certainly seems perfectly apposite to say about the argument

p & q, therefore p

that the premise contains the conclusion; here the conclusion, 'p', is actually present as one item of the conjunction 'p & q' which forms the premise, and in inferring it we are extracting part of the content of the premise. But then, it is also valid to argue

p, therefore p or q,

yet it no longer seems so intuitively satisfactory to describe the conclusion as contained in the premise. Moreover, there is not really much of a perspicuous analogy between logical and physical containment to help things along. Premises do not contain conclusions in the way a house contains ten rooms or a box a hundred nails. It is quite true that I can be familiar with the outside of a house or of a box while being ignorant about its contents. But deductive reasoning can hardly be like entering the house or opening the box to survey the inside. For one thing, a house or a box does not have an infinite number of contents, but each proposition has infinitely many logical consequences. And even where we have not deduced many or even any consequences of a set of premises, we often feel reasonably entitled to hold that we understand those premises, and our situation here does not seem very closely analogous to that of confronting an unopened box or standing before a house we have not entered. (It is more akin, apparently, to opening the box or going into the house and then somehow still not perceiving the contents.) It could be argued that we should not talk of fully understanding, or fully penetrating into the meaning of, any propositions, on the ground that to understand a proposition fully involves knowing all its consequences, and this we can never do because they are infinite in number; however, whether or not we choose to handle the notion of fully understanding a proposition on this very rigorous line, the salient point at present is that we can surely speak quite legitimately of understanding, say, Peano's postulates, while having to admit that we have so far recognised only a few of their consequences. And while the young Mill was not puzzling as to why we do not immediately grasp all the consequences of the propositions we understand, he was reasonably enough concerned to enquire why deductive reasoning from premises we understand so often produces enlightenment. In one sense, it seems that we already have the consequences in having the premises from which they can be inferred; yet we may need to perform complex step-by-step deductions to learn what those consequences are.

But would these difficulties disappear if we abandoned the containment idiom, and simply spoke of premises implying conclusions? Is it less mysterious to suppose that we can be ignorant of all or most of the consequences logically implied by a set of premises we understand, than it is to suppose that we can be ignorant of all or most of the consequences contained in those premises? Perhaps the problem stands out more when raised in terms of a relation of containment between

premises and conclusions, but it does not really evaporate if that talk of containment is jettisoned. If we think of premises as containing their conclusions, this can set up the expectation that those conclusions should in all cases be fairly obvious, so that if we thoroughly understand our premises, we should be immediately aware of numerous of their consequences - as if understanding must be an act of instant revelation of contents. But while the fact that the consequences of premises frequently are not as immediately accessible as the containment idiom might perhaps lead us to expect casts doubt on the appropriateness of that idiom, it remains puzzling just how consequences can be obscure. Merely to say, 'Well, that's just in the nature of implication; it's a brute fact that premises can imply consequences which are far from obvious,' fails to get to grips with the issue. That consequences can be well hidden is not in question, but what continues to seem mysterious is, as Dummett has written, how we can have accomplished all that is needed by way of the granting of premises sufficient for drawing a conclusion (we also require here, of course, a suitable rule of inference), and yet still find it enlightening to draw that conclusion (Dummett (1978), p.297). Whether we say that the conclusion is contained in, or just that it is implied by, our premises, it seems right to say that in having understood and granted the premises we must then be in some sense in possession of the conclusion. And yet it may take much time and effort before we actually recognise that conclusion, and we may then find that we have derived something both unforeseen and enlightening. The problem of how a person can understand a set of premises without knowing, of a given proposition implied by them, that it is implied by them, which we may label the 'hidden consequences problem,' is not merely a problem which arises when we press the idiom of premises containing conclusions; it remains even if we abandon the attempt to characterise the nature of implication in terms of containment. It is most properly classified as a problem for the theory of meaning, where the theory of meaning is conceived as having a responsibility for clarifying the nature of linguistic understanding.<sup>1</sup>

We saw in Chapter One that Dummett has been impressed by the problems which exercised Mill, and has spoken 'of a 'tension between what seems necessary to account for [the] legitimacy [of deduction] and what seems necessary to account for its usefulness' (*ibid.*). Susan Haack has recently disputed Dummett's claim that there is a tension in this area, and in effect dismisses the hidden consequences problem

as bogus. After pointing out that there is no direct contradiction between holding that deductive implication is necessary and that deductive inference is informative, she denies that there is any indirect contradiction either, holding it to be unproblematic that 'understanding comes in degrees' and that a person can have 'sufficient understanding of a proposition for it to be true to say of him that he believes it, without his having the complete understanding that might require him to recognise all its logical consequences' (Haack, p.227). (She adds - irrelevantly, if what has been said above is correct - that Dummett may be misled by taking too literally the notion that a valid argument is one in which the conclusion is contained in the premises.) To some extent, Haack is distorting Dummett's view by interpreting his word 'tension' as 'contradiction,' and while her view is quite closely reasoned, she appears not to have grasped fully the basic issue of concern to him (and to Mill). As she concedes, we can have an understanding of a proposition sufficient for our being able to believe it while yet being unaware of many of its logical consequences. Now the striking thing about such understanding is the way in which it characteristically excludes the feeling that there is anything residually cryptic or obscure about the proposition understood: when we understand a proposition in this way we feel that we know our way around it and that it has no dark corners into which we cannot see. Is this feeling merely illusory? At any rate, it needs to be explained how this can be our feeling, whilst it is also true that even simple deductive inferences from premises that we feel to be thoroughly unobscure and bathed in the light of understanding can be informative. My suggestion is not that we have to confess that there is something quite ineluctably paradoxical here, but only that we have more to learn about the nature of understanding before we can fully characterise what happens when we make an illuminating deductive inference. Haack, then, has not established that the hidden consequences problem is unreal.

One possible misunderstanding of the hidden consequences problem is worth noting. Mill pointed out, very realistically, that deductive sciences advance by means of chains of deductions, interim conclusions serving as premises of later inferences (SL, Bk.II.ch.iv). (However, what Mill, following convention, called chains of deductions he actually insisted on construing as inductive in their inferential aspects.) In providing a comprehensive answer to the question of how deduction brings us new knowledge it would be appropriate to refer to the fact that it is actually through chains of deductions

that many of the more interesting results in deductive theories emerge; and it is a further point of interest that as chains of inferences can be difficult to construct, such results may take a long time to derive. At one, reasonably superficial, level, there is in the latter consideration an answer to Mill's question why a science like geometry takes such a long time to develop. But it is important to avoid thinking that the recognition of the need for chains of deductions in deductive sciences enables us to solve the hidden consequences problem. It is not because chains of deductions are hard to construct that consequences are hidden. Rather, it is because consequences are often non-obviously implied by premises that deductive reasoning can be difficult - and chain reasoning especially so. (Hence the ultimate answer to the question of how deduction can be illuminating remains that consequences of premises can be unapparent - so unapparent, indeed, that it may require a chain of reasoning to reveal them, as in the case of many of the theorems of geometry derived from the axioms and definitions of that science.) To explain why consequences can initially be remote from view by the difficulty of constructing deductive chains which reveal them would be like explaining the original presence of ore deep in a mine by the difficulty of constructing the mine.

### III

Once he had become unsure whether syllogistic reasoning could really reveal hidden consequences of the premises, Mill came to doubt whether syllogising could be genuinely illuminating. Unfortunately, he confused (as it is easy to do) the problems of how syllogising can produce new knowledge and how it can avoid begging the question. In Bk.III.ch.iii of the Logic, he showed no awareness that he was running quite different issues together:

It is universally allowed that a syllogism is vicious if there be anything more in the conclusion than was assumed in the premises. But this is, in fact, to say that nothing ever was, or can be, proved by syllogism, which was not known, or assumed to be known, before. Is ratiocination, then, not a process of inference? And is the syllogism ... really entitled to be called inference at all? This seems an inevitable consequence

of the doctrine, admitted by all writers on the subject, that a syllogism can prove no more than is involved in the premises (SL, p.183).

This passage demonstrates Mill's growing feeling that deduction (or syllogising at any rate) can achieve no more than trivially 'reveal' obvious consequences of premises. But he immediately went on to redescribe the difficulty he had just mentioned (and which he said was the reason why so many people 'have been led to impute uselessness and frivolity to the syllogistic theory') as that of the petitio principii apparently present in every syllogism (ibid.). It is true, as Mill said, that a syllogism, considered as a proof of its conclusion, would be fallacious if the content of its conclusion outran that of its premises. It would in that case be formally invalid; but the charge of petitio Mill thought would hold even against formally valid syllogistic proofs, where the content of the conclusion did not extend beyond that of the premises. Mill's account of this ancient charge against syllogistic proofs is admirably clear:

It must be granted that in every syllogism, considered as an argument to prove the conclusion, there is a petitio principii. When we say,

All men are mortal,

Socrates is a man,

therefore

Socrates is mortal;

it is unanswerably urged by the adversaries of the syllogistic theory, that the proposition, Socrates is mortal, is presupposed in the more general assumption, All men are mortal: that we cannot be assured of the mortality of all men, unless we are already certain of the mortality of every individual man: that if it be still doubtful whether Socrates, or any other individual we choose to name, be mortal or not, the same degree of uncertainty must hang over the assertion, All men are mortal: that the same general principle, instead of being given as evidence of the particular case, cannot itself be taken for true without exception, until every shadow of doubt which could affect any case comprised with it, is dispelled by evidence aliundè; and then what remains for the syllogism to prove? (SL, p.184).<sup>2</sup>

At first sight it may be less than obvious how this petitio difficulty differs from the problem that Mill had identified just before. For both problems appear to arise if one holds with Mill that 'nothing ever was, or can be, proved by syllogism, which was not known, or assumed to be known, before' (SL, p.183); or as Dummett has characterised the predicament of concern to Mill, that 'in any case in which someone knows, in the strict sense, the truth of the premisses of a valid deductive argument, he must already know the truth of the conclusion' (Dummett (1978), pp.305-06).<sup>3</sup> And so the common difficulty would seem to be just this: a syllogistic proof cannot take us to anywhere we are not already at; and this can be described either by saying that syllogising cannot lead us to new knowledge, or that every syllogistic proof begs the question by purporting to establish what must already have been acceptable for the premise set to be acceptable. So Mill was right to talk as if he had one problem about syllogism, not two.

But two quite different issues are being conflated here. Actually the formulations quoted from Mill and Dummett are both ambiguous, their sense turning on how we take the word 'before' in Mill's and 'already' in Dummett's. Read one way, the assertion is that the conclusion has to be known in advance of the premise set being known, and if this were true, then every syllogistic proof would beg the question. On the other reading, what is being said is that the conclusion is known as soon as the premises are known - but not that it is known in advance of them. If this second claim is correct, then a syllogistic deduction of the conclusion may be pointless and trivial (or, at any rate, may be argued to be so), but it is not question-begging, as the premises can be known without the conclusion first having to be known. Thus Mill's and Dummett's dicta can point us to two rather different problems, depending on how we read them, one that of the alleged petitio committed by syllogistic proofs, the other that of the alleged pointlessness of syllogistic deduction - and indeed of deduction in general.

Mill's tendency to conflate the petitio problem and the problems revolving round the issues of hidden consequences and the informativeness of deduction surfaces very clearly in a note which he added to the 1862 edition of the Logic:

I hold it an abuse of language to say, that the proof that Socrates is mortal, is that all men are mortal. Turn it in what way we will, this seems to me to be asserting that a thing is the proof of itself.

Whoever pronounces the words, All men are mortal, has affirmed that Socrates is mortal, though he may never have heard of Socrates; for since Socrates, whether known to be so or not, really is a man, he is included in the words, All men, and in every assertion of which they are the subject (SL, p.206).

When Mill complains that a 'thing' (i.e. a proposition) is being employed as a proof of itself, he clearly means to allege that a petitio is being committed; and in the sentence beginning 'Whoever pronounces the words ...' he is locating what he takes to be the source of the petitio. But that sentence does not really support a petitio charge, for it merely says that the generalisation 'All men are mortal' subsumes as an instance 'Socrates is mortal.' Now reflection on the subsumption relation leads us to see that the premises of the syllogism 'All men are mortal / Socrates is a man / Therefore Socrates is mortal' imply (contain?) the conclusion, and may subsequently make us wonder how syllogism brings about epistemic advance. But it does not warrant a petitio allegation, for that needs something more than the fact that the premises of a deductive argument cannot be accepted without a decision on the conclusion being thereby foreclosed - it requires the truth of the different claim that the premise set cannot be accepted unless a decision on the conclusion has been previously made; but that claim is certainly not expressed by the sentence 'Whoever pronounces ...' 4

There is some excuse for Mill's confusion in the fact that earlier writers had also succumbed to it, and he was very likely misled by them. The same drifting between the issues which one finds in Mill can be observed also in the following passages from other authors. For instance, Dugald Stewart wrote:

Is it possible to conceive an understanding so formed as to perceive the truth of the major and the minor propositions, and yet not to perceive the force of the conclusion? [problem about the apparent triviality of syllogism]... [i]t must appear evident that, in the very statement of the major proposition, the truth of the conclusion is presupposed; insomuch, that it was not without good reason that Dr Campbell hazarded the epigrammatic, yet unanswerable, remark, that 'there is always some radical defect in the syllogism, which is not chargeable with that species of sophism known among logicians by the name of petitio



principii ...' (Stewart, vol.3, p.74; cf. vol.2, p.30). <sup>5</sup>

Again, for Whately:

... since even the objectors to Logic make it a subject of complaint, that in a Syllogism the Premises do virtually assert the Conclusion, it follows at once that no New Truth [in the sense of 'something neither expressly nor virtually asserted before'] can be elicited by any process of Reasoning.

It is on this ground, indeed, that the justly celebrated author of the Philosophy of Rhetoric [Campbell] and many others, have objected to the Syllogism altogether, as necessarily involving a petitio principii ... (Whately, p.239).

(Whately proceeds to display his confusion by citing the fact that deductive reasoning is often illuminating in practice as an argument against Campbell's petitio allegation.) And although this may not have been a text familiar to Mill, it is interesting to see that Descartes appears to have made the same mistake. In the tenth of his Rules for the Direction of the Mind he wrote:

... this style of argument [i.e. syllogistic] contributes nothing at all to the discovery of the truth ... we must note that the Dialecticians are unable to devise any syllogism which has a true conclusion, unless they have first secured the material out of which to construct it, i.e. unless they have already ascertained the very truth which is deduced in that syllogism

[this explanatory clause seems to switch from the issue of triviality to that of petitio]. Whence it is clear that from a formula of this kind they can gather nothing that is new (Descartes, vol.1, p.32). <sup>6</sup>

Finally, an example from a work written after Mill's Logic, and greatly influenced by it: Alexander Bain wrote that:

It is the peculiarity of the syllogism, that the conclusion does not advance beyond the premises. This circumstance has been viewed in two lights.

On the one hand, it is regarded as the characteristic excellence of the syllogism.

On the other hand, it is represented as constituting a petitio principii (Bain (1895), p.207).

(In justice to Bain, it should be said that his following remarks indicate that he might have had a shadowy awareness that the triviality and petitio objections to syllogism were distinct.)

#### IV

Mill had no original characterisation to give of the fallacy of petitio principii. In the lengthy chapter of the Logic devoted to fallacies, the section on petitio stays very close to Whately, whom Mill begins by quoting: petitio principii is the fallacy 'in which the premise either appears manifestly to be the same as the conclusion, or is actually proved from the conclusion, or is such as would naturally and properly so be proved' (SL, p.820).<sup>7</sup> It is a member of the class of fallacies which Whately calls 'material,' which occur either 'when the Premises are such as ought not to have been assumed,' or 'when the Conclusion is not the one required, but irrelevant' (Whately, p.162). Material fallacies are to be distinguished from 'logical fallacies,' which occur when a conclusion is inferred from premises which do not logically imply it - e.g. the fallacy of undistributed middle (Whately, p.160). It deserves saying that Mill was quite clear about the logical/material distinction, and never regarded the petitio objection as directed against the formal validity of syllogistic implication; he never denied that considered as 'formal inferences' of the kind studied by 'Formal Logic' (also called by him the 'logic of consistency'), syllogisms in the traditional moods and figures possess unimpeachable credentials (SL, Bk.II. ch.iii.sect.9; cf. EH, ch.xxiii). But to him the formal validity of the traditionally sanctioned syllogistic forms was insufficient to make them worthy of concern; his interest in logic was of an essentially practical kind, and so the thought which naturally weighed with him was that if syllogistic inference is materially fallacious, then it is useless to the practical task of proving things.

The term petitio principii is conventionally translated as 'begging the question,' but it has not always been understood in just the same way. What matters here is only what it meant for Whately and Mill.<sup>8</sup> After quoting Whately, Mill sums up his understanding of petitio this way: it is 'the employment of a proposition to prove that on which it is itself dependent for proof' (SL, p.820). Actually, what

Mill is calling petitio principii can be more precisely described as hysteron proteron, which is a special form of begging the question. The learned Sir William Hamilton had a surer grasp of the traditional nomenclature of fallacies than had Whately and Mill. In his Lectures on Logic the generalised fallacy of petitio principii is described as occurring when the rule of 'Probation' is breached that 'Nothing is to be begged, borrowed, or stolen; that is, nothing is to be pre-supposed as proved, which itself requires a demonstration' (Hamilton (1874). vol.4, pp.50-51). The special form hysteron proteron occurs where there is an infringement of the rule that 'No proposition is to be employed as a principle of proof [by this Hamilton means no more than premise], the truth of which is only to be evinced as a consequence of the proposition which it is employed to prove' (ibid.). Now it is this rule which is broken by syllogistic proofs if a major premise like 'All men are mortal' cannot properly be known until all singular propositions of the form 'Socrates is mortal' - i.e. propositions of the kind drawn as conclusions of the syllogistic process - are known. But as Hamilton goes on to say, petitio principii, hysteron proteron and arguing in a circle (i.e. using a proposition 'for its own probation') are 'only various modifications - only special cases' of the infringement of 'one general law,' namely, 'That no proposition be employed as a Principle of Probation, which stands itself in need of proof' (Hamilton (ibid.), pp.51-52). So to avoid any confusion, I shall continue to talk, in the remainder of this chapter, in the conventional way of the petitio charge against syllogism.

Mill wrote that it is the syllogism 'considered as an argument to prove the conclusion' which invites the petitio charge. He intended by this expression to mark a contrast with syllogisms regarded as records or 'memoranda' of inductive inferences, but it can also serve very well to delimit that distinct and important class of syllogistic arguments which Dummett calls 'suasive' ones (Dummett (1978), p.296). A suasive argument is one employed to persuade someone to accept a conclusion on the basis of premises he already accepts; as Dummett puts it, 'the epistemic direction must coincide with the consequential one: it is necessary that the premisses of the argument be propositions already regarded as true by the person whom we wish to persuade of the truth of the conclusion' (ibid.). A suasive argument commits a petitio if the conclusion has to be known for one or more of its premises to be known, for in that circumstance the epistemic direction is not genuinely running from premises to conclusion, though it purports

to do so.

One of the greatest oversights of Whately and Mill was that they failed to grasp the fact (familiar to Aristotle) that syllogisms often play an explanatory role, their premises serving not to persuade someone of the truth of a conclusion not previously accepted, but to provide a reason why a conclusion already known is true. For instance, I might be perfectly aware that Baby William is growing fat, but want to know why. Someone who produces for me the syllogism:

All babies who eat Growbaby brand foods grow fat,

Baby William eats Growbaby brand foods,

therefore

Baby William grows fat,

will not be persuading me to believe that Baby William is growing fat - for I know that already - but he will enlighten me as to the cause of William's growing fat (namely, by relating his case to a quasi-law about babies who eat Growbaby brand foods). The significant feature of an explanatory syllogism like this one is that it is indifferent whether it would be question-begging considered suasively, because it is not intended as a proof, of what I do not know on the basis of what I do, but as an explanation of why a proposition I already accept is true. Very often, as Dummett has remarked, our only reason for accepting the premises of an explanatory argument may be that they provide a plausible explanation of the final line, and even here, though the epistemic direction runs precisely contrary to the direction of logical consequence, there would be no point to a charge of petitio. In fact, a threat of petitio against explanatory syllogism seems to loom just when the epistemic direction is not opposed to that of the consequence relation, when, that is, the conclusion is not part of the epistemic basis of the premises which entail it. Pace Haack (p.219), it is untrue that in every explanatory argument the epistemic direction runs counter to that of logical consequence; it sometimes happens that we have already accepted the premises on independent grounds when it occurs to us that they can serve to explain the conclusion, and here it is misleading to speak of the epistemic direction running from conclusion to premises (indeed, it is misleading to speak of an epistemic direction within the argument at all). But this raises again the question whether it is ever possible to know a universal proposition without first knowing individually all its instances - for this is what we should be presupposing to be possible if we accepted a proposition of the form 'All As are B' without reference to whether we first accepted some one of its instances,

which we then proceeded to explain by means of a syllogism with the universal proposition as major premise. Even though we would not be employing the major premise in the proof of the conclusion (so a charge of hysteron proteron would not lie), we could be accused by the upholders of syllogistic petitio of illicitly helping ourselves to a major premise independently of knowing the conclusion (that is, knowing one of its instances).

But it is not just a certain kind of explanatory syllogism which stays clear of the petitio objection; an interesting category of suasive ones does so as well. This is the category of suasive syllogisms whose major premises can unproblematically be known without their instances being first known, because they express stipulations of one sort or another, e.g. orders, laws, permissions and prohibitions. Mill was aware, probably from reading Stewart, of the existence of such cases where 'the generalities [the major premises] are the original data' (SL, pp.193-94; cf. Stewart, vol.3, p.203), and while he rather oddly did not draw attention to the fact that here the petitio allegation does not apply, he can hardly have failed to recognise it. There is nothing even prima facie question-begging about the syllogism:

All U.K. citizens over the age of 18 can vote in parliamentary elections,

Jim is a U.K. citizen over the age of 18,  
therefore

Jim can vote in parliamentary elections.

The major premise of this syllogism can be known without an empirical investigation of the age structure of U.K. voters; expressing a law passed by the British legislature, it can be straightforwardly learned by consulting the statute book. The syllogism could therefore play the role of a non-question-begging suasive argument to persuade someone that Jim is entitled to vote in parliamentary elections.<sup>9</sup> (As it happens, it could also in other circumstances perform an explanatory function: someone who knew that Jim was entitled to vote but wanted an explanation of his entitlement would have it supplied by the premises.) Some philosophers, though not Mill, would maintain that suasive syllogisms with stipulative major premises are far from exhausting the class of suasive syllogisms whose major premises can quite clearly be known without their conclusions first having to be known, and which are thus immune to the petitio criticism. According to these philosophers, some general truths (e.g. 'All triangles have three sides,' 'All things which are coloured are extended') are knowable a priori,

and if this is correct then it would be plausible to suggest that syllogisms incorporating such propositions as major premises cannot be accused of begging the question, for knowledge of these propositions does not wait on knowledge of their instances. Mill, of course, could not have accepted this, for he denied that any propositions were known a priori.

## V

Before turning to Mill's strategy for resolving the petitio objection to suasive syllogism, it is worthwhile to consider some interesting and ingenious attempts to show the problem to be misconceived. Two of these, I shall argue, are unsuccessful, but a third attempt at dissolving the problem will force a certain modification in its statement.

It has sometimes been held that Mill thought (suasive) syllogism problematic only because he did not pay sufficient attention to the role of the minor premise in the derivation of the conclusion. This view was famously put forward in De Morgan's Formal Logic (pp.300-01), where Mill was accused of holding the false belief that the conclusion of a syllogism follows from the major premise alone. De Morgan contended that someone might find out that all men are mortal, then that a particular named individual was a man, and put these two pieces of information together to advance to the conclusion that the named individual is mortal, the process begging no questions, on De Morgan's thinking, because the conclusion is obtained not from one premise but two (whereas a conclusion has to be inferred from itself, according to De Morgan, for a genuine petitio to occur). But this fails to get to grips with Mill's worry. Mill was not, of course, under the impression that the minor premise of a syllogism was superfluous to the proof, and in the 1862 edition of the Logic he indignantly repudiated De Morgan's suggestion that he was (SL, pp.207-08). Mill thought the petitio allegation cogent not because he believed that the conclusion of a syllogism was wrapped up in one premise, the major, and proved from it alone, but because he felt that one should not be accepting a proposition like 'All men are mortal' if one remained genuinely open to a proof that a particular named man was mortal. On Mill's view, De Morgan was too sanguine in supposing there to be nothing questionable about finding out that all men are mortal before one has

found out that Socrates is mortal; thus the threat of petitio has indeed to do with the major premise in a way it has not to do with the minor, but that is not to say that the minor premise is a redundant element in the proof.

A quite different attempt to dissolve the petitio problem is due to John Corcoran (private communication). According to Corcoran, Mill's argument for the syllogism being a petitio is self-refuting. A crucial assumption underlying Mill's case, he says, is this one:

(A) Every known universal proposition presupposes knowledge of its instances.

It is because Mill assumes (A) that he proposes that the major premise of a syllogism cannot be known before its conclusion, for the conclusion is an instance of the major premise. But now consider (A) itself. Corcoran argues:

On Mill's own view, this (being a universal proposition) presupposes acquaintance with each and every universal proposition. So it would seem that any attempt to prove that the syllogism considered as a proof begs the question would itself beg the question.

The first problem which some will have with Corcoran's argument is that it construes (A) as capable of being an instance of itself, which breaks rules against self-referential language uses designed to obviate the semantic paradoxes. Those not convinced that self-reference is always and everywhere wrong might prefer to press a different line of criticism. (A) is a very strong principle indeed - and in fact it is certainly stronger than anything accepted by Mill, as we have seen that he was ready to admit that some universal propositions express 'original data.' So what principle, if not (A), would he have been relying on when setting up the petitio problem? From the examples he used it appears that he had in mind a problem besetting those syllogisms whose major premises are propositions normally confirmed by empirical investigation of their instances. Hence one might suppose that instead of (A), a critical principle in his argument was:

(A') Every known empirical universal proposition presupposes knowledge of its instances.

But (A') is not itself a proposition of the kind verified by an investigation of its instances; it is a philosophical rather than an empirical claim, a proposition of whose truth or falsity we become convinced by conceptual considerations rather than by empirical investigation of the instances it subsumes. Therefore, Corcoran's argument fails, for, irrespective of prohibitions against self-reference,

it is clear that (A') does not fall under itself as an instance, as it is not an empirical proposition. However, while this counter to Corcoran is an effective one, Mill could not himself adopt it without embarrassment to his thesis that all universal propositions (except stipulative ones) are empirically based. Admittedly he does not always live up to the boldness of that claim, and it is conceptual rather than empirical considerations which prompt him to accept a principle like (A'). But, strictly speaking, his official radical empiricist stance is incompatible with his defending his argument for syllogistic petitio against Corcoran's objection along the line I have sketched, for it cannot accommodate the strategy of denying that (A'), as a non-empirical proposition, falls under itself. Here is an intriguing tension in Mill's thought, but for present purposes the important point is that unless we take up an extreme empiricism, we need not be convinced by Corcoran's claim that the case for syllogistic petitio is self-refuting.

A third objection to Mill's account of the petitio allegation cannot be dismissed before an important modification has been made to that charge. Mill believes, very plausibly, that in a suasive argument the epistemic direction coincides with the consequential one: someone who is to find a syllogistic proof persuasive first knows the premises, and is convinced of the conclusion by deriving it from them. The worry about petitio arises because principle (A') asserts that one cannot know an empirical universal proposition before knowing its instances, which Mill takes to exclude the possibility that one could genuinely know an empirical major premise of a syllogism before knowing its conclusion.<sup>10</sup> Whether Mill was right to maintain (A') is a matter we shall come to shortly; but for the moment we may waive doubts about the truth of that principle and ask whether it really does support the petitio charge in the way he believed it did.

I am indebted to John Corcoran for the recognition that Mill has committed a subtle error here.<sup>11</sup> Consider again the argument to prove the mortality of Socrates from the premises that he is a man and that all men are mortal. Mill's claim was that the proposition 'Socrates is mortal' has to be known before 'All men are mortal' can be reasonably asserted. But does it — even if we accept the truth of (A')? What (A') requires is that before the mortality of all men can be known, the mortality of each individual man needs to be established; the picture here is of an investigation being carried out into individual cases seriatim, which has to be completed before generalisation can be attempted. ( Additionally, of course, before it can be asserted



that all men are mortal, it needs to be known that the survey of individuals has been exhaustive, and that no cases of men remain uninvestigated. That is to say, not only must a complete survey be taken, but it must be known that the survey is complete.) Among the individuals whose mortality has to be settled in the course of the survey is the individual we call Socrates. But is this the same thing as establishing the truth of the proposition 'Socrates is mortal' - which is what Mill and others have assumed? Corcoran points out that we should distinguish between knowing that a certain thing, which happens to be called 'a', has a certain property M, and knowing that the proposition expressed by 'Ma' is true. Now what (A') really requires to be known is not the truth of the proposition 'Socrates is mortal,' but simply that the individual, who happens to be called Socrates, has the property of mortality. This is because it is not necessary to the completion of the appropriate survey that the individual whom we call 'Socrates' should be surveyed under that name; it would be quite adequate for him to be picked out under another name or identifying description, or, indeed, for him to be picked out by mere ostension, providing it is noted that he, as an individual man, is mortal. But this means that suasive syllogisms do not beg the question in the way Mill supposed: for it is not necessary to satisfaction of principle (A') that individuals referred to in the conclusions of such syllogisms should have been picked out in the surveyal process under just the same names or descriptions as are employed of them in the conclusions. Thus a crucial presupposition of Mill's argument for suasive syllogism committing a petitio is mistaken.

Corcoran's argument is, I believe, a sound one, and it is a significant contribution to the debate about syllogistic petitio. But what exactly has Corcoran established? Has he shown that all Mill's worries about suasive syllogism were groundless, and that syllogistic arguments to prove their conclusions are wholly free of fallacy? In fact what Corcoran has actually established in pointing out that accepting the major premise of a syllogism does not, even on Mill's presuppositions, require that we first accept the proposition drawn as the conclusion of the syllogistic argument, is that suasive syllogisms do not commit the fallacy of hysteron proteron. We have seen that although Mill speaks of syllogistic petitio, it is more accurate to regard his charge against syllogism as one of hysteron proteron, as defined by Hamilton; and Corcoran has shown that this charge is misconceived. However, Corcoran's argument does not prove that many

suasive syllogisms do not commit a broader kind of petitio fallacy. For the argument does not dispute Mill's claim (A'), that every known empirical universal proposition presupposes knowledge of its instances, though it shows that this should not be taken to mean that in order to accept such a proposition as 'All men are mortal,' one needs first to know all such propositions about individual men as 'Socrates is mortal,' 'The Duke of Wellington is mortal,' and so on. It is granted, that is, that before being able to accept 'All men are mortal' one has to know whether the individuals, whom we happen to refer to by 'Socrates,' 'The Duke of Wellington,' etc., are mortal, though it is denied that one has to know that they are mortal under these names. But what if we attempt to syllogise from the major premise 'All men are mortal' without having first carried out the investigation into the mortality of each individual man? It will be recalled that Hamilton described a fallacy of petitio principii as occurring when there is an infringement of the rule of proof that 'Nothing is to be begged, borrowed, or stolen; that is, nothing is to be presupposed as proved, which itself requires a demonstration.' If (A') is correct, then if we do not carry out the requisite survey into the mortality of individual men, we shall be guilty of begging the question, in the broad Hamiltonian sense, if we syllogise from 'All men are mortal.' We would be reasoning from a premise which we had not established, and infecting our proof with petitio, where we accepted an empirical universal proposition without surveying the cases it subsumed.

It is obviously not possible to survey all cases of past, present and future men in order to verify 'All men are mortal' in the manner required by (A'). But if many empirical universal propositions are practically unverifiable in this way, not all are. It would be possible to verify, by a survey of instances, a proposition such as 'All coins now in John's pocket are pennies' (possible, at least, at the moment referred to). Yet while 'All coins now in John's pocket are pennies' could be non-question-beggingly utilised as the major premise of a suasive syllogism, it appears that such a syllogism escapes the Scylla of petitio only to encounter the Charybdis of triviality: for if we argue, All coins now in John's pocket are pennies, Coin C is a coin in John's pocket, therefore Coin C is a penny, it is unlikely that in deriving the conclusion we will consider that we have learnt anything worthwhile which we did not learn when we made our survey of the coins in John's pocket. To say this is not to disregard Corcor-

an's distinction between knowing that a certain thing, happening to be called 'a', has a certain property M, and knowing the truth of the proposition 'Ma'. It is, rather, to assert that often in practice our interest in an individual thing is, so to speak, a transparent one; that is, we are often interested directly in a particular thing, a res, and its properties, rather than in whatever-object-falls-under-a-particular-name-or-description (indeed, we might not even know any label conventionally applied to the object in which we are interested). Having found, in our initial survey, that the coin which happens to be the one we later refer to as 'C' is a penny, it is probable that we have found out all that we ever will want to know about it; once we know it under the label 'C', we can derive syllogistically (and without begging any questions) the conclusion that 'Coin C is a penny,' but given the transparency of our interest in the coin, this brings us no significant new knowledge. It can be admitted, however, that there may be circumstances in which a reasoner is particularly interested in establishing that whatever falls under a certain name or description possesses a certain property, and if that name or description is the minor term of a syllogism, it could be both non-question-begging and illuminating for him to deduce the conclusion from the major and minor premises, for in previously surveying the actual case in fact referred to by the minor term, he might have been ignorant that this was the case referred to by that term. This possibility, which Mill entirely missed, becomes apparent only when Corcoran's distinction is carefully noted.

## VI

Corcoran has shown that principle (A') does not, when properly understood, require that the conclusion of a syllogism be already known before its major premise can be accepted. Nevertheless, if he has shown that a hysteron proteron charge against suasive syllogism is misguided, he has not demonstrated that at least many non-trivial syllogistic proofs do not commit a petitio, in relying upon an imperfectly warranted major premise.

It is fairly clear that a completely satisfactory defence of suasive syllogism is going to have to take issue with principle (A'). Now rather surprisingly for a principle which has sustained an

objection to syllogistic proof which not only Mill but many others have found convincing, (A') is actually not only false but even obviously so - once it is regarded from the right angle. The reason why Mill and other people have believed the principle to be true is almost certainly that they have confused it with another, true proposition, as we shall see in the next section. But while Mill's official acceptance of (A') prompted him to adopt his notorious theory that syllogism is not a method of proof (which we shall examine more closely in the following chapter), he did occasionally in the Logic display a much sounder grasp of the epistemic preconditions of generalisation, and in the light of that better understanding he indicated a powerful line of defence of suasive syllogism against the accusation of petitio.

At several places in the Logic, including Bk.II.ch.iii where the petitio problem is discussed (see sect.5; cf. Bk.III.ch.i.sect.2, Bk.III.ch.iii.sect.1), Mill acknowledged that a universal proposition about things of a kind can often legitimately be accepted on the basis of a limited sampling of things of that kind - that, for instance, the proposition that all men are mortal can be accepted as an inductive projection from those cases of human mortality of which we have had experience. This recognition is commonplace in itself, but it alerted Mill to the possibility of construing many syllogisms as the second stages of two-stage proof structures, of which the first comprises an inductive projection from a set of propositions about individual cases to a lawlike universal proposition about things of their type, and the second a syllogistic process from the universal proposition, together with a suitable minor premise, to a conclusion about an individual not included in the original sample. Such a proof sequence is evidently free from the danger of petitio, if we consider the matter in Mill's terms (for there is no need to know the conclusion before being able to accept the major premise); and it is immune equally to the charge of petitio as revised in the light of Corcoran's argument (because there no longer remains any good reason for worrying that the major premise has been accepted as true without an adequate justification). Because he never properly disentangled this response to the petitio objection from his less satisfactory account of the role of syllogism, Mill preferred to call the second stage of this 'double operation' by the name 'interpretation' rather than 'inference' (SL, p.197), yet he did achieve the critical insight that the whole process

consisted of 'an induction from ... known cases to a general proposition, and a subsequent application of that general proposition to the unknown case' (ibid.).

He further observed that:

An induction from particulars to generals, followed by a syllogistic process from those generals to other particulars, is a form in which we may always state our reasonings if we please. It is not a form in which we must reason, but it is a form in which we may reason, and into which it is indispensable to throw our reasoning when there is any doubt of its validity ... (SL, p.198; cf. p.202)

One may doubt the claim that all reasonings can be cast into this form, but it is at least interesting to see Mill holding that those reasonings which do follow this pattern will be valid - by which he apparently meant free not just from formal but also from material fallacy.<sup>12</sup> Once he had formulated this theory in the Logic, Mill never entirely forgot it, though he was usually very hazy about its distinctness from his less successful accounts of inference. One especially succinct statement of his conception occurs in the review article 'Grote's Aristotle' which was one of the last writings he produced: here he speaks of 'the operation which establishes a conclusion by showing that it comes within the scope of a generalisation that has already been assented to on evidence deemed sufficient' (GA, p.479).

Mill's defence of suasive syllogism against the petitio allegation consists, then, in identifying a kind of context in which a syllogistic proof begs no questions. Mill clearly believed that such contexts of occurrence of syllogistic arguments are common; and that is a perfectly plausible opinion, the application of inductively warranted universal propositions to new individual cases being a standard inference process. Oddly, however, such inducto-deductive reasonings have not received attention in the traditional logic textbooks. This is possibly because setting one out in full would be an intricate business. The second, syllogistic stage provides, of course, no difficulties; but the inductive first stage from a number (perhaps very large) of propositions about individual cases to the universal proposition which will form the major premise of the syllogistic component is another matter. Such hybrid part-inductive, part-deductive structures have maybe failed to appeal to logicians who like arguments to be neat and tidy. Be that as it may, a neglect of the larger

contexts in which suasive syllogisms frequently appear can easily lead to worries about petitio, for taken by itself a syllogistic proof with an undefended major premise and a conclusion which is an instance of that premise might well appear to be upturning the normal order of epistemic dependence of universals on individual cases. Yet leaving tacit the inductive first stage of a Millian inducto-deductive argument is permissible (and, indeed, often a practical necessity) provided that its existence is not forgotten; thus a syllogism can often be quite properly regarded as a kind of enthymematic inducto-deductive argument, the inductive first stage not being explicitly presented.

But not all syllogisms can be so regarded. Those with stipulative major premises cannot be. And nor can those whose major premises are merely accidentally true generalisations which are incapable of being inductively inferred from a sample of individual cases, for they are clearly not the second stages of inducto-deductive proofs. Where nothing less than a complete enumeration of instances would suffice to justify the major premise, that proposition should not be employed as a premise of a suasive argument before being confirmed by such an enumeration; but if petitio is avoided by carrying out the enumeration before utilising the major proposition in this role, it is a further question whether the deduction of the conclusion will be truly illuminating. For where the case referred to in the conclusion has been already surveyed before the major proposition is accepted, the syllogistic process will produce new knowledge only in the special situation in which it matters to us to have that case brought under a minor term of whose applicability we were not made aware by the original survey. <sup>13</sup>

Mill's conception of inducto-deductive methodology reflects his cautious, conservative philosophy of science. To be acceptable, the universal propositions which become the major premises of non-question-begging suasive syllogisms have to appear reasonable projections from samples of their instances in the sort of way that 'All men are mortal' derives support from past experience of human deaths. (All such inductive projections, in Mill's view, are warranted by the overall uniformity of nature, which he calls 'the ultimate major premise' of all inductions (SL, p.308).) Later philosophers of science have tended to sympathise much more with Whewell's more adventurous policies for the admissibility of hypotheses in scientific investigation, and it is hard to deny that if scientists adhered to Mill's very circumspect and rather unimaginative methodology, then the pace

of research would be impeded. Mill was not unaware of Whewell's views on method, but he distrusted their ability to produce sound science, believing Whewell too fond of the suspect Kantian notion that the order of nature is in large measure imposed on it by man. He described Whewell's position with fair accuracy when he stated that Whewell allowed as acceptable those inductions which lead to a 'general proposition which binds together the particular facts, and makes them, as it were, one fact,' this being 'not the mere sum of those facts, but something more, since there is introduced a conception of the mind, which does not exist in the facts themselves' (SL, p.294). Of present interest is the point that if Whewell's conception of inductive support is sound, then a passage of inducto-deductive reasoning whose major premise was a universal proposition achieved through a Whewellian rather than a Millian form of induction would be equally safe from a charge of begging the question; that major premise would be adequately grounded even though no survey of its instances, as required by (A'), had taken place. Whewellian inducto-deductive reasoning offers more hostages to fortune in its first stage than does the more stolid Millian variety, but its second stage is no more open to objection. (These forms of inducto-deductive methodology are to be distinguished, incidentally, from hypothetico-deductive methodology. A syllogistic process may be employed to deduce testable consequences from an assumed hypothesis whose truth remains still in question, and here the syllogism is not intended as a suasive demonstration of the conclusion.)

## VII

But now we have to face up to the most puzzling aspect of Mill's resolution of the problem of syllogistic petitio. Why, if he had an answer to the complaint that suasive syllogisms beg the question, did he fail to see that he had one, and continued to talk about syllogisms construed as proofs of their conclusions committing a petitio? How is it that having seen that principle (A') need not be accepted, he remained seemingly unable to draw the appropriate conclusions?

It is not an answer to this question to say simply that Mill had made up his mind that syllogism was not truly a form of inference at all, but rather a species of 'interpretation' of inference (SL, Bk.II.

ch.iii.sect.5); for we need to know what pressure Mill felt forced him to take this unlikely line. It is worth noting that the second stage of a Millian inducto-deductive argument does not fail to fulfil Mill's condition that inference must always be epistemically advancing: to move syllogistically from knowledge of a generalisation to knowledge of an individual instance not previously known is obviously to advance in knowledge. Furthermore, Mill sometimes seems to be having the greatest difficulty in explaining his notion of 'interpretation' in such a way that 'interpreting' is not merely inferring under a different name. To be sure, his official view is that the only real inference is inductive inference 'from particulars to particulars,' but when he writes that, very often:

a single careful interrogation of experience may suffice, and the result may be registered in the form of a general proposition, which is committed to memory or writing, and from which afterwards we have only to syllogize (SL, p.198)

- this syllogising being represented as interpretation, rather than inference - we are extremely hard pressed to give any content to the claim that the syllogistic stage interprets the major proposition in some non-inferential manner.

So what was it which forced Mill to take up the implausible and uninviting view that to syllogise was not to infer? The answer must lie in his confusion, described earlier, of the petitio problem about syllogistic proof with problems about hidden consequences and the informativeness of deductive inference. We saw that Mill, in company with certain other philosophers, failed to spot the ambiguity latent in such locutions as: if we have accepted the premises, we have already determined the conclusion; when we accept the premises, we have already foreclosed the question of whether the conclusion is true; we cannot accept the premises without settling the acceptability of the conclusion. All these locutions, read one way, are true, for where premises logically imply a conclusion, it would be logically inconsistent to accept the premises and refuse to accept the conclusion. But read another way, they can be taken to say that we must have settled whether the conclusion of a suasive deductive argument is true before deciding whether to accept its premise set. And on this second reading they are false.

I suggest that it was because Mill mistakenly conflated the logical fact that the major premise of a syllogism like that about Socrates'



mortality subsumes the case referred to in the conclusion as an instance, with the (false) principle that (except in the special cases of universal propositions true by stipulation) knowing a universal proposition requires first knowing all its instances, that he believed that suasive syllogism could not be successfully defended against a charge of petitio. In other words, a fact about logical implication got misread as the ground of a petitio charge against suasive deductive arguments, and once he had succumbed to this mistake, no amount of insight into the potentialities for advancing knowledge of hybrid inducto-deductive structures could save Mill from thinking that it was in deep principle impossible to rescue suasive syllogistic inference from the petitio charge. Whatever could be said in favour of suasive syllogism, Mill must have felt, would in the end come up against the unanswerable objection that in knowing the premises, we have already settled the truth of the conclusion. Nothing short of a full realisation of the ambiguity of such a formulation could have prevented Mill from falling into error, or redeemed him from it once he had so fallen.

Hence Mill came to think that the only way to preserve the respectability of the syllogism was to deny it to be a form of inference at all: if syllogising is to be legitimate and useful, it must be doing something other than inferentially revealing what is already implied by the syllogistic premises. Real, non-question-begging inference cannot consist in the tracking down of the logical implications of known premises, but must, instead, be inductive in character. Just what Mill thought real inference was, and how he eventually conceived of the function of the syllogism, will be the topics of the next chapter of this study.

## THREE

### MILL'S POSITIVE THEORIES OF INFERENCE AND THE SYLLOGISM

#### I

As great oaks from little acorns spring, a single mistake can sometimes generate a large amount of erroneous theory. Mill's misreading of a logical fact about implication as an epistemic condition on the acceptability of universal propositions not only prevented his seeing the potential of his conception of inducto-deductive methodology to vindicate suasive syllogism against the charges of triviality and petitio; it also led him to construct an elaborate account of the nature of inference and the role of the syllogism which, though in many ways intriguing, is ultimately both wrong-headed and unnecessary. While occasionally he seems to have come close to seeing this, the powerful undertow created by his basic confusion always managed to draw him back to the view that inference cannot be syllogistic, and that to syllogise must be to do something other than to infer.

A philosopher of weaker will might now have capitulated to Lockian criticism of the syllogism. For the nub of Locke's complaint had been that 'men, in their own inquiries after truth, never use syllogisms to convince themselves' (vol.2, p.268); and this was just what Mill had felt forced to concede in his study of the petitio allegation. But Mill intended no surrender to Locke. If syllogism is not inference, then, lo, it is something else - and something important too! Moreover, what inference really is can be explained much more clearly than it was by all Locke's visual metaphors of seeing the connections of ideas. Mill presented his positive views on inference and the syllogism in the later pages of the long third chapter of the second book of the Logic.

To succeed in producing convincing new accounts of inference and the syllogism, Mill rightly saw that it was necessary to give a per-

suasive theory of the role of universal propositions in our thinking, and, in particular, to show that universal major propositions of suasive syllogisms were not to be thought of as premises.<sup>1</sup> To the objection that this was denying what was virtually undeniable, and that it was highly eccentric to dismiss the traditional view that the major proposition was a premise from which, with the minor premise, the conclusion was to be inferred, Mill would have replied that preservation of the traditional picture of the major proposition made it impossible to defend suasive syllogism from the charge of petitio.

According to Mill's revised view, acceptance of the conclusion of a suasive syllogism does not rest, despite appearances, on acceptance of its major proposition. Our ground for affirming that a living man (Mill's example was the Duke of Wellington) is mortal is not that all men are mortal, but that in the past men have died - every man, as Mill rather quaintly put it, 'in whose case the experiment had been fairly tried' (SL, p.187). This is arguing, as Mill described it, 'from particulars to particulars' (or, in more standard modern terminology, from singulars to singulars), and it is clear from his exposition that he saw his account of reasoning as obtaining support from the tenet of empiricism that in the beginning was the particular: in other words, that particulars (to use his terms) precede generals in the order of knowledge. But if the major proposition of a syllogism never contributes to the proof of the conclusion, then the obvious question arises as to what role it does play. Disregarding the suggestion that it is actually redundant, Mill proposed a number of characterisations of its role, leaving it initially somewhat obscure whether he believed these came to the same thing, or whether he took the major proposition to perform different functions in different settings. The major proposition, he declared, could be looked on as a memorandum of past observations (SL, pp.186, 193f.), a check on argument (e.g. p.196f.), an instruction for understanding new cases (p.193f.), and an assertion of the sufficiency of evidence for a new conclusion (pp.200, 204f.) - all of which conceptions stalwartly eschew the idea that the major proposition is a premise.

The theory that all 'real' inference is from particulars to particulars is presented in its most radical colours in the following passage:

The mortality of John, Thomas, and others is, after all, the whole evidence we have for the mortality of the Duke of Wellington. Not one iota is added to the

proof by interpolating a general proposition. Since the individual cases are all the evidence we can possess, evidence which no logical form into which we choose to throw it can make greater than it is; and since that evidence is either sufficient in itself, or, if insufficient for the one purpose, cannot be sufficient for the other; I am unable to see why we should be forbidden to take the shortest cut from these sufficient premises to the conclusion, and constrained to travel the "high priori road," by the arbitrary fiat of logicians (SL, p.187).

Any plausibility this passage may appear to have is only superficial. It may not be immediately clear why we cannot do as Mill says, and reason directly to the mortality of the Duke of Wellington from the evidence of the past instances of individual men who have died - that is, infer this without requiring a universal proposition as intermediary. But consider some different cases. I have a pocketful of coins, and the few I have drawn out up to now have been pennies: am I entitled to infer that any coins I subsequently take from my pocket will be pennies also? Or I have spun a coin and it has landed heads four consecutive times: should I infer that it will land heads next time too? In fact, I can only draw these inferences rationally if I have some ground for thinking that the past regularities are not quite random ones; and that is to say, if I have the right to believe that all the coins in my pocket are pennies, or that the coin I am spinning has somehow acquired a bias to fall heads regularly. It is possible that Mill might complain that the samples in these instances are small and consequently untrustworthy compared with the much longer unbroken run of human deaths which ground the inference to the mortality of the Iron Duke. But what is important about such long runs is precisely that they provide an inductive ground for the belief that certain regularities are not merely accidental but represent patterns explicable by laws. The evidence of individual cases supports a new individual conclusion only by inductively warranting such a generalisation as that all men are mortal, from which, together with the premise that the Duke of Wellington is a man, we can deduce that the Duke of Wellington is mortal.

A distinction can therefore be drawn between reasonable and unreasonable inductive extrapolations, the rational reasoner's projections being governed by general conceptions about the kinds of pattern

and lawlikeness to be expected in nature.<sup>2</sup> By failing to leave room for such general considerations, Mill's account of reasoning left obscure the difference between intelligent, truth-attaining inferences and blind, or even insane, mental vagaries. Mill very unwisely tried to back up his account by remarking that even children and animals, being incapable (he alleged) of forming general conceptions, must reason in the manner he described (SL, Bk.II.ch.iii.sect.3), but Whewell made the inevitable objection that their mental processes are hardly ideal models of rational thinking. In a note added to the 1851 edition of the Logic, Mill conceded as much, disclaiming 'the application of such terms as induction, inference, or reasoning, to operations performed by mere instinct, that is, from an animal impulse, without the exertion of any intelligence' (SL, p.287); but this disclaimer only serves to emphasise the poverty of his most radical account of inference from particulars to particulars, for within its exiguous provisions it is impossible to draw the distinction between intelligent and unintelligent reasonings which he had to confess was important.

But there is also in the Logic a less radical theory of inference from particulars to particulars which is much less susceptible to the foregoing objections. This account likewise denies that the major proposition of a syllogism is a premise; but it acknowledges the importance of discipline and direction in reasoning by describing the major proposition as functioning, in effect, as a rule of inference governing the transitions from particulars to particulars. This role of the major proposition was set out by Mill as follows:

All inference is from particulars to particulars:  
 General propositions are merely registers of such inferences already made, and short formulae for making more: The major premise of a syllogism, consequently, is a formula of this description: and the conclusion is not an inference drawn from the formula, but an inference drawn according to the formula: the real logical antecedent, or premise, being the particular facts from which the general proposition was collected by induction.... According to the indications of this record [i.e. the major proposition] we draw our conclusion: which is, to all intents and purposes, a conclusion drawn from the forgotten facts (SL, p.193).

Mill's suggestion that the major proposition of a syllogism can be

regarded as an inference rule rather than a premise has appealed to certain twentieth century philosophers, who have termed universal propositions accorded this role 'material' inference rules to distinguish them from such 'formal' rules as the Dictum de omni et nullo.<sup>3</sup> Sometimes support for the view that in actual reasoning people tend to employ material rather than formal rules is drawn from the alleged fact that syllogising by means of a formal rule would be, in Locke's word, a very 'cumbersome' affair. A recent and typical statement of this position is by Bruce Aune:

Outside of logic texts explicit inferences are remarkably rare. Thus instead of reasoning according to the explicit pattern

All men are mortal.

Socrates is a man.

Therefore, Socrates is mortal,

a real person would no doubt reason according to a pattern like this:

Socrates is a man.

So, he is mortal.

In conforming to this shorter pattern a person would be reasoning in accordance with the premise 'All men are mortal,' and he would no doubt volunteer this premise if asked to justify his inference (Aune, p.13).

(Aune's talk about the major premise here is misleading; his thesis is properly that the major proposition is functioning in everyday reasoning as a rule.) The contention that inferring by means of a material rule is quicker or easier than inferring by a formal rule is, as we shall see, very much open to question, but it is not in fact urged by Mill. For in one important respect his theory is unlike most other theories of material rules of inference in that it takes a conclusion like 'Socrates is mortal' to be inferred, by the formula 'All men are mortal,' not from 'Socrates is a man' alone, but from the conjunction of that minor premise with a host of premises of the form 'a is mortal,' 'b is mortal,' and so on, these last normally being suppressed in the expression of the argument, which thus must be regarded as an enthymeme. But this means that Mill's theory, unlike typical twentieth century accounts of inference by material rules, is intended as a theory of inductive rather than deductive reasoning. Thus it is patently not designed, as the later accounts often are, to establish that actual reasonings

are less complex than they would be if they followed standard deductive forms as described in the textbooks. Oddly enough, the form of argument Mill describes is actually quite incapable of doing what it was intended to do, namely to remove the suspicion of petitio which beset (in his view) standard-form syllogistic proofs. For whether 'All men are mortal' is taken to be the premise of a deductive, or a rule of an inductive, argument, the question arises as to whether it can be justifiably accepted before one has verified all propositions about the mortality of individual men! It is simply not plausible to hold that while we have to take care that we do not accept 'All men are mortal' on inadequate or question-begging evidence when we want to use it as a premise, we can be indifferent to its grounding when we take it as a rule (cf. Kyburg, p.101). Premise or rule, 'All men are mortal' states a matter of fact, and it is impossible to see how we could rationally remain indifferent to the truth of that fact when employing it as a rule of inference to draw conclusions we could trust in, just as it is impossible to conceive ourselves being reasonably satisfied to use it as a premise if we lacked solid grounds for thinking it true.<sup>4</sup> Now it was argued in the preceding chapter that Mill was really in error in thinking that 'All men are mortal' could not be employed as a premise in the argument to the mortality of Socrates without petitio occurring. And the defence against the petitio charge when 'All men are mortal' was read as a premise is equally applicable when it is construed as a rule. But from Mill's perspective, from which suasive syllogisms appear question-begging, it cannot mend matters to insist that the major proposition is a rule and not a premise, for either way the same objection, which concerns the epistemic relations between universal propositions and their instances, appears to arise against the purported proof.

At this point one could well be forgiven for wondering whether there is in reality anything more than a merely terminological difference between reasoning from the major proposition, and reasoning in accordance with it. Whately was one philosopher who believed the difference to be a verbal one only. Some people, he noted, had 'denied that the conclusion is inferred from the universal premiss. But then, they acknowledge that the truth of that premiss is an indispensable condition of such inferences ...' Yet if the truth of the major proposition is the important thing, Whately continued, it could hardly matter which prepositional expression one employed to characterise the use made of it:

And so ... if any one chuse to maintain that the

conclusion is drawn from the one premiss, by, or through, the other premiss, this would be accounted merely a needless and unimportant innovation in phraseology (Whately, p.15).

Whately's claim that it makes no difference whether we talk of arguing from or by (= in accordance with) the major proposition needs taking seriously - much more seriously, in fact, than it has been by many who have upheld the notion of material rules of inference. Is there really a substantive distinction at issue here, or have many philosophers merely misconstrued a distinction which is properly regarded as verbal only? At first it might seem that Aune and other such latter-day Lockians have a ready answer to Whately. Aune's contention was that it was much simpler to employ 'All men are mortal' as a rule than as a premise; and if there genuinely is such a practical difference between major propositions used as rules and as premises, it will be hard to deny that arguing from and in accordance with the major proposition must be different in some significant way. But on examination Aune's claim looks very doubtful. He proposes that if 'All men are mortal' is a rule, it can be thought 'tacitly,' whereas if it is a premise, it needs to be thought explicitly. But this seems gratuitous. Presumably his (unexplained) use of the word 'tacitly' is intended to mark some distinction among levels of consciousness, and his idea is that if we employ 'All men are mortal' as a rule of inference, we do not need to be thinking it with the same high level of conscious attention that we normally devote to premises. Now it is indeed quite possible that some aspects of our conceptual schemes are so thoroughly internalised that, though we use them, we barely notice them; perhaps our beliefs in basic logical laws are of this character, constantly in service shaping and modifying our notions, but scarcely ever themselves being entertained in any highly conscious way. It seems on the surface much less likely that a material proposition like 'All men are mortal' would ever become so internalised, but even if that point is waived as a concession to Aune, what certainly should not be waived is the objection that he has not explained why it should be that 'All men are mortal' can only be thought 'tacitly' (to use his somewhat misleading term) when it is a rule, and not when it is a premise. Probably Aune is borne along by a false analogy: because formal rules of inference are, arguably, 'tacit' in our reasonings, then material rules will be so as well. But this is not at all obviously so, and it is very difficult to see what further argument could establish that material rules can be



thought 'tacitly' though material premises cannot.

However, there is some reason for thinking that Whately was wrong in holding that it makes no difference whether we talk of arguing from or in accordance with the major proposition. To secure a substantive content to the distinction, we can think of the material rule as replacing a formal rule as the enabling principle of an argument. A syllogism whose rule of inference is its major proposition is dependent neither on the Dictum nor on Nota notae, and someone who infers the conclusion by means of a material rule need not be thinking the Dictum or Nota notae even at some subordinate level of consciousness. Furthermore, as an account of what goes on in actual processes of reasoning this may seem to be supported by the fact that it is able to accommodate, by virtue of its economy, the feeling of Lockians that actual syllogising is a very straightforward affair. For while the traditional account recognises both the major proposition (as a premise) and the Dictum or Nota notae (as the rule of inference) as parts of the machinery of syllogistic inference, the present view dispenses with the latter when it elevates the former to the status of a rule. <sup>5</sup>

Against this, it may be said that if the Dictum (as the favourite traditional principle of syllogism) is really as obvious and trivial as Mill alleged, then its absence from the syllogistic process hardly represents much of a saving in intellectual machinery. But the real objection to the view that the Dictum can be dropped from the process is that, however trivial it might appear, it is really not at all a redundant device which can be relinquished without loss, but a wholly essential enabling principle of rational syllogistic inference. Those who have defended the notion of material rules of inference have missed a subtle but crucial point about the conditions of rational inference. A question which needs to be asked is: What makes it rational for someone who has accepted that all men are mortal to infer subsequently that a given individual man is mortal? To answer that he can rationally make the inference because he is rationally entitled to treat the proposition 'All men are mortal' as a rule of inference is unsatisfactory, because it does not explain how he becomes rationally entitled to adopt this proposition as a rule. This objection will, of course, be resisted by defenders of material rules; they will say that it can be rationally accepted as a rule because it is both universal and true. But this is not an adequate reply. The rational adoption of 'All men are mortal' as a rule essentially needs to be informed by the thought that if all

members of a class have some property, then any given individual belonging to that class will have it. If this thought is absent, then the rationale behind the material rule is absent too, and its adoption can only be zombie-like. But this rationale is just what is expressed by the Dictum! A reasoner who had not grasped that if all members of a class have a property, then an individual member will have it, would simply not possess the conception which would give point to taking 'All men are mortal' as a rule by which to infer the mortality of Socrates from his manhood; it would have to remain obscure to him how the rule could be an appropriate instrument for delivering the conclusion. But this means that the Dictum cannot, after all, be dispensed with; and if there really are any inferences drawn according to material rules, they must, so to speak, be drawn within the shadow of the Dictum. But it must now become doubtful whether there really is any syllogising by material rules: for if the Dictum cannot be dropped from thought, then not only will major propositions be premises of Dictum-governed inferences, but any further functioning of them as rules of inference would be utterly superfluous - if, indeed, it would make sense now to talk of material rules, given Whately's criticism, with the Dictum still in the offing.

A reasonable conclusion from this is that the notion of inference by material rules is a logician's unicorn - a sheer piece of mythology. It is in any case, as we saw, not a notion which is in principle capable of doing anything to assist Mill to counter the petitio charge against suasive syllogistic processes, given his understanding of the ground on which that charge rests. So we must now recognise that both his accounts of inference from particulars to particulars, the radical and the less radical versions, fail to be viable alternatives to standard accounts of the nature of inference.

## II

At the beginning of Book III of the Logic, entitled 'Of Induction,' Mill declared that:

all Inference, consequently all Proof, and all discovery of truths not self-evident, consists of inductions, and the interpretation of inductions:

and therefore:

What Induction is ... and what conditions render it legitimate, cannot but be deemed the main question of the science of logic - the question which includes all others (SL, p.283).

Inference from particulars to particulars is inductive inference, capable, in Mill's account, of 'interpretation' by syllogistic forms. Of the two versions of his theory of inference, it is perhaps the more radical one which received the greater stress; the less radical version, which characterised major propositions as rules of (inductive) inference, is less in evidence in the pages of the Logic - though it may well be that Mill never wholly thought through the distinction between the two accounts. It would appear to be the more radical line he had in mind when he spoke of major propositions as providing checks on inference. Here the idea is that when we are making inductive projections from a sample of cases, we should take care to consider whether we would be willing to accept the projection to all cases of the kind involved in the sample; if we would be reluctant to do that, we should then hesitate about projecting to further individual cases. (see, e.g., SL, p.197). In a certain very loose sense, we might speak of inductive reasoning of the sort Mill was describing here as being 'in accordance with' a rule provided by a universal proposition; yet there is in fact a great difference, though he did not advert to it, between the claim that the major proposition is a material rule of inference and the claim that it provides a check on inference: in the former role, it is, or at least purports to be, the principle by which a conclusion is inferred; in the latter role, it is, strictly speaking, not an essential element of the inference at all, for it is neither an inference rule nor a premise, but rather an external criterion by which to judge whether a certain reasoning is a sound one or not. Indeed, as Mill in this connection speaks of the major proposition being proved along with new individual cases, and from the same evidence (e.g. at SL, pp.196, 284, 572), he cannot be regarding it as playing any role in the inference to any individual conclusions: for it is not available for that purpose in advance of individual conclusions. Interestingly, not only can the major proposition so regarded not play a part in the making of an inference to a fresh individual conclusion, but it cannot, either, be employed without circularity to provide a retrospective justification, given that its own justification, in Mill's view, relies on precisely the same passage of inference.

But if a major proposition does not assist in the initial making of an inference, and cannot justify an inference retrospectively either, it is not clear that there can be much content to the idea that it provides a check on inference. Mill's account would have been plausible if he had modified it in one important respect. It is not unreasonable to suggest that an inductive procedure might be vindicated by constructing a syllogism with a major premise reached on the lines Mill describes, from which testable consequences are inferred; this is in fact just that inducto-deductive methodology which he occasionally supported, and which was described in the previous chapter. The problem with this, of course, is that it runs counter to his official view that there is no legitimate deductive inference. Thus the inductive process from particulars to particulars remains without any appropriate vindication, and what Mill regarded as a 'check' on it is inoperative, because for that purpose it has to be possible to deduce testable consequences from the major premise, but this is precisely what he disallowed. The mere production and contemplation of a proposition like 'All coins in my pocket are pennies' cannot in itself vindicate a Millian inference from the fact that all coins in my pocket so far examined have been pennies to the conclusion that an unexamined coin x in my pocket will be a penny. Whatever Mill claimed, the universal proposition has not been assigned a determinate mode of function here, and it is no more than an unattached cog in the machinery. But it would be apt for vindicating an inductive process if it were considered as a premise from which, with the minor premise 'x is a coin in my pocket,' the conclusion 'x is a penny' - a testable proposition - could be deduced. Mill, in short, wanted the major proposition to play a role for which he had not assigned it enough operating capacity.

The notion that syllogistic processes, albeit not themselves inferential, can somehow support and vindicate real inferences from particulars to particulars is the common core to Mill's various characterisations of the role of syllogism. He never made any attempt to locate any significant differences among his descriptions of syllogistic major propositions as providing a check on inference, as being 'memoranda' for understanding the direction taken by a passage of reasoning from particulars to particulars, and as presenting instructions for dealing with fresh cases. The problem with the common line of thought here remains that of explaining how syllogistic processes could provide any justification of inferences from particulars to particulars if they are not themselves valid deductive

arguments: Mill was attempting the impossible task of buttressing weak arguments by what are not, on his account, arguments at all. Any plausibility his views may seem to have derives entirely from our inevitable tendency to slip back into thinking, despite his explicit rejection of the view, that the syllogistic processes he describes are really suasive arguments.

Non-standard though it is, Mill's view of the syllogism is not, as Locke's is, a dismissive one. Having described the petitio threat to suasive syllogism, Mill could still honestly declare a wish to 'enter a protest, as strong as that of Archbishop Whately himself, against the doctrine that the syllogistic art is useless for the purposes of reasoning' (SL, p.196). As a check on real inference, the syllogism could still, in his opinion, play an important practical role in reasoning. Syllogisms are therefore not merely the concern of the theoreticians of logic, as they would be if they did no more than provide some abstract characterisation of the acceptable patterns of inductive reasoning which were in practice never carried out with any reference to syllogistic rules; rather, they are crucially involved in all good reasoning, not, to be sure, as reasonings themselves, but in the guidance of the reasoning.<sup>6</sup> Mill's view is that real inference is always from particulars to particulars, but in 'interpreting' our 'memorandum' (i.e. the major proposition), we remind ourselves of the direction which our inductive projection from particulars has so far been taking. Thus the proposition 'All men are mortal' is a memorandum, apt for interpreting, which 'shows that we have had experience from which we thought it followed that the attributes connoted by the term man, are a mark of mortality' (SL, p.194). It is a fair objection that Mill's terminology of 'interpretation' and 'memoranda' does little to explain his intentions here, but he is not the first theorist to have marred the clarity of a brave new idea by wrapping it up in misleading language.

### III

Finally, two notes on Mill's positive theories of reasoning and the syllogism, one logical and one historical.

(A) In Chapter One it was observed how Mill preferred to consider real inference as intensional rather than extensional in nature. The Dictum de omni et nullo he considered unsuitable as a principle of

syllogism because it failed to bring out the fact that our thinking is concerned with ascribing attributes to objects rather than assigning objects to classes. It is therefore not at all surprising that his account of real inference from particulars to particulars is couched in terms of individuals and their attributes: the possession of a certain attribute by individuals already examined grounds the inference to the possession of that attribute by other individuals. As well as things and their attributes, Mill also accepted the existence of real natural kinds, and the entry of these into our reasoning. In Book IV of the Logic he explicitly attested his belief in kinds which were not merely conventional or arbitrary classifications of things, but which were determined by possession of naturally associated attributes (Bk.IV.ch.vii). A major proposition like 'All men are mortal' mentions a kind, that of men, which Mill would have believed to be a real one; and the force of the proposition, as a memorandum in the reasoning process, would on his view be to record the direction in which our experience of members of that kind, in respect of the attribute of mortality, is tending. <sup>7</sup>

Nevertheless, it is worth remarking that an account of inference from particulars to particulars could alternatively be delivered in purely extensional terms. Talk of attributes would be replaced by talk of class membership, and the major proposition of a syllogism would be construed as a memorandum that all members of one given class were also members of another given class. From propositions about individuals being members of a class, conclusions would be drawn about other individuals being members of that class. (and this without the assistance of a universal proposition as a premise). Such an account would be as well able as Mill's actual account of 'real inference' to overcome the threat of petitio which he held to be unanswerable so long as major propositions are regarded as premises of proofs; but it would in no way be capable of evading the insurmountable problems which we have seen beset the theory of inference from particulars to particulars in its intensionalist guise. To the present-day logician, then, it must count as no less unacceptable than the theory which Mill actually offers. It is, however, no more unacceptable; and - to recur to a theme of Chapter One - Mill would not have been entitled to argue, as he might have wished to, that the Dictum could not be the principle of syllogism (in the broader sense of a characterisation of the content and relations of the syllogistic propositions, rather than of a form of inference), on the ground that 'real inference' must be concerned with attributes and kinds: for inference from particulars to partic-

ulars could equally well, for all he has shown, be construed in an extensionalist manner.

(B) Mill noted in his Autobiography (pp.189/191) that the inspiration for his theory of syllogism and real inference came from Dugald Stewart's Elements of the Philosophy of the Human Mind. After years of reflection upon the problem of how inference advances knowledge, the rereading of Stewart suggested a clue:

I came upon an idea of his respecting the use of axioms in ratiocination, which I did not remember to have before noticed, but which now, in meditating on it, seemed to me not only true of axioms, but of all general propositions whatever, and to be the key of the whole perplexity. From this germ grew the theory of the Syllogism propounded in the Second Book of the Logic; which I immediately fixed by writing it out (AU, ibid.).

It is hard to say to what extent Stewart anticipated Mill's theory in detail; the discussion in the Elements is brief and unclear, and it is not surprising that Mill, by his own account, did not grasp the sense of Stewart's ideas until many years after his first acquaintance with them.

There are two sections of Stewart's text which must have specially intrigued Mill. In the first of these, Stewart claimed that certain beliefs which epistemology typically regards as extremely fundamental, such as those in the continuance of nature's laws, in our own identity over time, and in the trustworthiness of memory, are, in a sense, assumed in all our reasonings, though normally only 'a metaphysician or a logician' would think of explicitly stating them (Stewart, vol. 3, p.37). Such fundamental truths, and with them the 'axioms' of the sciences (including geometry), do not figure as premises of our actual reasonings, but they function as 'vincula,' or chains, which 'give coherence' to our inferences (pp.37-39). Unfortunately, Stewart gave no precise explanation of what he meant by 'vincula,' though he clearly believed that 'axioms' and 'elemental truths' in some way contribute unity and structure to our reasonings, while not figuring explicitly in them. Perhaps, indeed, he had no very precise theory to give.

A later passage in the Elements resembles Mill's own discussion more overtly, and is worth quoting at length. Stewart is talking about mathematical reasoning, and evidently thinking specifically of geometry:

[I]n order to arrive at a general conclusion in mathematics, (and the same observation holds with respect to the sciences,) two different processes of reasoning are necessary. The one is the demonstration of the proposition in question [i.e. stating an individual case]; in studying which, we certainly think of nothing but the individual diagram before us. The other is, the train of thought by which we transfer the particular conclusion to which we have thus been led, to any other diagram to which the same enunciation is equally applicable. As this last train of thought is, in all cases, essentially the same we insensibly cease to repeat it when the occasion for employing it occurs, till we come at length, without any reflection, to generalize our particular conclusion, the moment it is formed; ... When this habit is established, we are apt to imagine ... that the general conclusion is an immediate inference from a general demonstration; and that, although there was only one particular diagram present to our external senses, we must have been aware, at every step, that our thoughts were really conversant, not about this diagram, but about general ideas ... (Stewart, vol.3, pp.90-91).

Having made a discovery in one instance, for example about a geometrical property of a diagram, we come to expect the same property in other similar diagrams, according to Stewart, and after a while we succumb to the illusion of thinking that our conclusions about particular diagrams are based not, as in fact they are, upon the evidence of the particular diagrams themselves, but upon some kind of general principle about diagrams of their sort. This line of thinking, which was in fact not wholly original to Stewart, being suggested in Thomas Beddoes' Observations on the Nature of Demonstrative Evidence published in 1793,<sup>8</sup> anticipates Mill in its rejection of the view that universal propositions are required as premises in reasoning, though it remains somewhat obscure whether Stewart wished to substitute a view of real inference being from particulars to particulars, in Mill's sense. Part of what Stewart writes indicates he may have believed that while experience of individual cases sets up expectations about other individual cases not yet examined, each fresh case has nevertheless to be scrutinised and assessed on its own evidence alone.



Confronted with new cases, we initially employ a 'train of thought ... essentially the same' as that which we used on the first case - which suggests Stewart is thinking not so much of an inference, but of the repetition of a basically observational process. But in time we cease to bother repeating this train of thought at all, and directly affirm the conclusion when we face a new case. Yet if this looks a little more like a real inference, it may rather be that Stewart takes there to be here a complete absence of reasoning, and only a purely non-rational step to the conclusion (perhaps one governed by a mechanism of psychological association). However, it is a further possibility that he was altogether hazy about the distinction between inductive inference and a successive inspection of individual cases, and would have described as a series of inferences about new cases what was really just a process of inspection of them seriatim (albeit one governed by expectations set up by experience).

It is evident that there is some kinship between the ideas of Mill and Stewart, but it is probably more reasonable to regard Mill as being inspired by Stewart than as borrowing from him in a substantial way. Stewart's views were not highly developed, and what Mill can have gained from him was less a theory than a hint as to the direction in which a theory could be sought. In place of Stewart's brisk dismissal of the notion that reasoning essentially involves universal propositions, Mill devoted many pages to the analysis of the role which such propositions play if they do not serve as premises of suasive arguments. If he failed ultimately to arrive at a satisfactory account, it was not from any deficiency in his grasp of the importance and complexity of the issues.

## FOUR

### THE POSSIBILITY OF INDUCTIVE REASONING

#### I

Although all real inference, in Mill's opinion, is from particulars to particulars, he was ready to concede that scientific enquiry is normally interested in the establishment of universal propositions - to wit, in the discovery and demonstration of natural laws. Indeed, induction may even be defined, Mill said, as 'the operation of discovering and proving general propositions' (SL, p.284). But this does not mean that the scientist's inferences are different in some fundamental way from the inferences from particulars to particulars which had been described in the second Book of the Logic; for induction in science is merely a 'form of the very same process,' 'generals' being 'but collections of particulars, definite in kind but indefinite in number.' Where our evidence entitles us to draw an inference about 'even one unknown case,' wrote Mill, it will also justify us in 'drawing a similar inference with respect to a whole class of cases' (ibid.).

Still, the task of providing a comprehensive account of an ideal methodology of science, which Mill set himself in the later Books of the Logic, understandably required a good deal of elaboration of the theory of inference outlined in Bk.II. Science's special objective of reducing the multitudinous phenomena of experience to a law-governed system demands for its satisfaction that the scientific investigator be a highly sophisticated reasoner as well as a careful observer; like a detective attempting to unravel a particularly clever crime, the scientist must seek intelligently for significant but often elusive clues, while avoiding numbers of false trails. As Mill recognised, scientific progress is only possible when the investigator has some basic conceptions about the way in which nature is organised, so that

his research is guided to fruitful results by his expectations about what he will find. Pre-eminent, in Mill's view, among the notions which the successful scientific researcher needs to have in mind are those of the uniformity of nature, and of the existence of a cause for every event. Accordingly, he took pains in Bk.III to defend the claim that these notions are presuppositions of all successful inductive reasoning in science - and in fact of all successful reasoning, whether motivated by theoretical or practical interests, aiming at knowledge of the world. Borrowing a Kantian idiom, we could say that the prime purpose of the third Book of the Logic is to explain the possibility of successful inductive reasoning. Alternatively, though it is to risk misunderstanding by using a dangerously ambiguous expression, we might describe Mill in Bk.III as concerned with the justification of induction.

The phrase 'the justification of induction' can reasonably be read in a number of ways. Most commonly nowadays, one hears talk of justifying induction when it is Hume's famous attack on the soundness of inductive reasoning which is up for discussion. It is sometimes said that the chief business of Western philosophy has been the contribution of footnotes to Plato; whether or not that is so, it would certainly be accurate to regard most twentieth century studies in the philosophy of induction as footnotes to Hume. The importance of his treatment of induction is scarcely disputed even by those who refuse to go along with his sceptical contention that there can be no such thing as a sound inductive argument; for it is generally recognised that unless that powerfully supported claim is refuted, or in some way circumvented, no system of inductive logic, no matter how ingenious, rests on anything better than sand. Yet the refutation of Hume was not an objective of Mill, even though he did regard himself in Bk.III as justifying inductive inference. Indeed, Mill did not even grasp what Hume's problem was, and his chief concern was to explain how inference from particulars to particulars, despite its appearance of slightness, was really the only form of inference which science either needed to, or could, admit.

It is possible to single out three strands of thought in Bk.III which are suitably described as concerned with the justification of inductive inference. None is designed to rebut Hume.

(A) Not all inductive extrapolations from examined instances are justified; but how do we establish which ones are legitimate, and, in particular, how should we decide what kind of projections to make

in an area of research of which we have had no or little direct previous experience? (It will be seen that in tackling (A), Mill is at last, in Bk.III, making up for his failure in Bk.II to raise the question of what distinguishes rational and irrational inductive projections.)

(B) Inductive inference (believes Mill) is legitimised in principle by the existence of uniformity in the causal structure of nature. But are inductive reasonings justified when the reasoner has no explicit consciousness of this uniformity?

(C) Mill maintains that 'the uniformity of the course of nature ... [is] the ultimate major premise of all inductions' (SL, p.308). But what is the logic of the support which the uniformity of nature provides for inductive reasoning, given that by the theories of Bk.II universal propositions do not deductively warrant any conclusions?

A fourth very important strand in Bk.III is concerned less with justification than with psychological explanation. Mill is interested in the question of the origin of the notion of uniformity, and he urges that we should seek a source for it in experience rather than in some form of rational intuition. We would have no belief in uniformity, Mill considers, if we were not confronted by evidence for it in experience. Characteristically, Mill also holds that it is experience which justifies the belief in uniformity, and thus opens himself up to the criticism that he is proposing an inductive justification of the very principle which he takes to warrant our inductive practices. However, we shall see that this circle is more apparent than real, because he does not take the uniformity principle to warrant inductive reasonings in any standard sense; nor, in fact, does he regard the basic soundness of inductive reasoning (which Hume challenged) as being in question at all. I shall argue that it is never scepticism of the Humean type, but always one of the issues (A) - (C), or the psychological question about the origin of our belief in uniformity, which Mill is concerned with in Bk.III. Thus the discussion in this Book of the Logic is more continuous with that of the preceding Book than is allowed by those who think that Mill has now switched his attention from the presentation of a theory of inference to the task of defending it against the radical Humean criticism; rather, he is without any apprehension that inductive reasoning is subject to fundamental objection on the lines laid down by Hume, and is solely concerned with the further articulation and elaboration of the account of inference sketched in Bk.II.

## II

The problem about inductive reasoning we normally ascribe to Hume was actually known to the ancient Pyrrhonian sceptics. Sextus Empiricus wrote:

It is also easy, I consider, to set aside the method of induction. For when they propose to establish the universal from the particular by means of induction, they will affect this by a review either of all or of some of the particular instances. But if they review some the induction will be insecure, since some of the particulars omitted in the induction may contravene the universal; while if they are to review all, they will be toiling at the impossible, since the particulars are infinite and indefinite. Thus on both grounds, as I think, the consequence is that induction is invalidated (Sextus Empiricus, Bk.II.sect.204; my emphases).

The central issue here, as in Hume's treatment of induction, is: When we make inductive projections from a sample, what guarantee have we that further particulars will resemble those already examined (in other words, what guarantee that uniformities hitherto observed will be preserved)? In the view of Sextus and of Hume the answer is: None.

Now the fact is that there was nowhere a lively interest in this sceptical problem of induction before the publication of the Green and Grose edition of Hume's works in 1874 - and by that date Mill was dead. Although Hume before 1874 could hardly be described as an unread author, the new impetus given to Hume studies by this edition enabled the true character of his ideas to emerge more clearly than it had done previously; in connection with induction, it gradually now became clear that Hume's main concern had been with the justification of inductive reasoning in the sense at issue in Sextus, rather than with psychological explanation of inductions, as had previously been thought (See Appendix to this Chapter). Judging by the paucity of references to him, Mill seems to have taken very little notice of Hume's philosophy, though he possessed both the Treatise of Human Nature in its first edition (London, 1739-40), and the Essays and Treatises on Social Subjects (Edinburgh, 1793), of which the second volume contains the Inquiry Concerning Human Understanding.<sup>1</sup>

Yet the view that he was concerned to discuss Hume's problem of induction has dominated accounts of his philosophy of inductive inference. Here is a small selection of the opinions of recent scholars.

H.W.B. Joseph took Mill to be engaged in the 'impossible' task of proving a uniformity principle that is necessarily presupposed by our inductions (Joseph, pp.421-25). R.P. Anschutz alleged that Mill 'endeavours to combat the widespread scepticism of his predecessors and contemporaries regarding the possibility of formulating a demonstrative theory of induction' (Anschutz (1953), p.97). According to Karl Britton, 'The problem of induction, as Mill sees it at its widest, is to determine what kind of connexion justifies [the] transition from evidence to generalization. To this question, Mill makes a characteristic answer: the transition is justified when there is a uniformity of nature - a law, a universal fact' (Britton (1953), pp.149-50). H.J. McCloskey (who appears to take the whole of Mill's study of induction as little other than an attempt to rebut Hume) wrote: 'Mill accepted that he was involved in explaining by what right we infer from the known to the unknown. Mill ... was right in this, that the problem is an important one which does not admit of facile dissolution as a pseudo-problem in the ways suggested by such dissolutionists as P. Edwards and P.F. Strawson' (McCloskey, p.49). Fred Wilson has recently tried to convince us that Mill is not 'being foolish in what he says about justifying induction' against Humean-type strictures, though he 'has often been criticized for his inductive 'justification' of induction' (Wilson, pp.1-2). Lastly, Alan Ryan and A.F. McRae have accepted that Mill was anxious about the Humean problem of induction, even though they have quite rightly pointed out that it could never have been his intention, given his account of the role of universal propositions in reasoning, to justify inductive reasonings by representing them to be tacitly deductive: that is, Mill would not have thought it right to try to buttress inductive arguments by adding to their premises a uniformity principle by whose assistance their conclusions can be derived deductively (Ryan (1974), p.83; McRae (1973), pp.xxxiv-xxxv). But all these writers, including the last two, have misunderstood the tone of Mill's discussion by assuming that he was alert to, and impressed by, the sceptical difficulties raised by Hume which have attracted so much attention in the present century. And because they have pressed an interpretation which is essentially anachronistic, they have mostly

felt that his 'solution' is a dire failure: in arguing that inductive reasoning is justified by the uniformity of nature, a principle whose warrant is itself inductive, Mill - the usual story goes - gets inextricably involved in circularity. Yet it is hard to believe that Mill could have given such a transparently silly argument unless his mind was truly as irrational as Jevons notoriously alleged; and that is a slur which a careful reading of his philosophy does not bear out.

At the outset of Bk.III Mill addressed himself to a question about the justification of inductive reasonings - but it is a question about justification in sense (A) he was concerned with. He complained that the detailed study of inductive methods had been hitherto neglected; some of the 'generalities of the subject' had been discussed, but previous analyses of the 'inductive operation' had 'not been specific enough to be made the foundation of practical rules, which might be for induction itself what the rules of the syllogism are for the interpretation of induction' (SL, p.283). Mill's interest here was in locating sound methods of inductive enquiry - a search that culminated in his statement of the famous canons of induction - and his investigation of uniformity, causation, laws, the significance of observation and experiment, etc., which forms the content of Bk.III, was pursued for the sake of its bearing on the practical task of distinguishing sound from unsound modes of enquiry. It is noteworthy that to some later philosophers, the task in which Mill was here engaged concerns the only worthwhile puzzle about induction. For example, Keith Campbell has written that 'The genuine problem of induction is that of finding criteria whereby acceptable procedures may be distinguished from unacceptable. There are instances of both types' (K. Campbell, p.148). Whether or not one goes along with Campbell in dismissing the Humean problem of induction, one can see that he and Mill are certainly identifying a significant research project concerned with the justification of induction; only, it is not the same project as that undertaken by those who wish to counter the Humean critique of induction in general. Indeed, the success of the Mill/Campbell project presupposes that Hume's scepticism is ultimately without foundation: for it is impossible to distinguish sound from unsound inductive methods if there cannot in principle be any sound ones.

It would be wrong to suggest that Mill's commentators have failed in all cases to see that he had an interest in finding criteria for distinguishing acceptable from unacceptable inductive arguments. But

in regarding him as having a central interest in the Humean problem of induction they have been guilty of ascribing him their own concerns. In fairness, however, it needs to be said that there is some excuse for their misinterpretation, for Mill undoubtedly says many things about inductive inference which could easily be misunderstood, even by a cautious reader.

One source of misunderstanding is Mill's great interest in the principle of the uniformity of nature, which frequently figures in discussions of Hume's problem. Mill tended to speak almost interchangeably of the principle of uniformity and the law of causation, because he regarded patterns of uniformity in nature as depending on the causal relationships generalized by the law of causation: 'There is, however, no other uniformity in the events of nature,' he wrote, 'than that which arises from the law of causation' (SL, p.577; cf. pp.323-27, 562, 567). Moreover, when in Bk.III.ch.xxi he redeemed a promise made in ch.iii to speak later of the evidence for the principle of the uniformity of nature, 'the fundamental axiom of induction,' it was the evidence for the law of universal causation, as the presupposition of all inductive methods, which he discussed. Mill explained the principle of uniformity as an 'assumption with regard to the course of nature and the order of the universe; namely, that there are such things in nature as parallel cases; that what happens once, will, under a sufficient degree of similarity of circumstances, happen again; and not only again, but as often as the same circumstances recur' (SL, p.306). Some pages later, he said that it is the law of causation on which 'depends the possibility of reducing the inductive process to rules,' and characterised the law as follows:

To certain facts, certain facts succeed. The invariable antecedent is termed the cause; the invariable consequent, the effect. And the universality of the law of causation consists in this, that every consequent is connected in this manner with some particular antecedent, or set of antecedents. Let the fact be what it may, if it has begun to exist, it was preceded by some fact or facts, with which it is invariably connected (SL, p.327).

This close association of the two principles is natural and reasonable to an empiricist like Mill who disbelieved in the existence of causal necessity (SL, pp.326-27); causal relationships will consist, for such a philosopher, in some variety of constant conjunctions of phenomena, and the uniformity of nature as a whole is simply the sum of those uniformities. <sup>2</sup>



Bk.III.ch.iii, 'Of the Ground of Induction,' was Mill's attempt to answer the question: How is inductive reasoning possible? The title of the chapter might lead one to expect that it is going to be an essay on Hume's problem, but it is not. After referring to the assumption of uniformity involved in every induction, Mill revealingly continued:

And, if we consult the actual course of nature, we find that the assumption is warranted. The universe, so far as is known to us, is so constituted, that whatever is true in any one case, is true in all cases of a certain description; the only difficulty is, to find what description (SL, p.306; my emphases).

The words I have emphasised here are not an aberration on Mill's part; there are several parallels to them, and they make plain that he saw no good reason for scepticism about the truth of the uniformity principle / the law of causation. He went on immediately to speak of uniformity as a 'universal fact' (ibid.), and a little below spoke of 'the uniformity which we know to exist in nature' (SL, p.310; my emphases). Later in the Logic he talked of the law of causation as standing 'at the head of all observed uniformities, in point of universality, and therefore ... in point of certainty,' and proceeded to say that:

we shall find ourselves warranted in considering this fundamental law, though itself obtained by induction from particular laws of causation, as not less certain, but on the contrary, more so, than any of those from which it was drawn (SL, p.570).

And:

We may even, I think, ... regard the certainty of that great induction [the law of causation] as not merely comparative, but, for all practical purposes, complete (SL, p.573).

(In the Press-copy manuscript of the Logic, Mill had gone further still, suggesting that the law of causation stands 'on an equal footing in respect to evidence with the axioms of geometry itself' (SL, p.571).)

Mill was, it is true, willing to admit that we can conceive of the universe's dissolving into chaos (SL, pp.565-66), but this remained for him a bare conceptual possibility, and was not at all what it is if Hume's argument is correct, namely a prospect which we have

absolutely no good reason for believing to be less likely than the alternative prospect of continued order. On Mill's way of thinking, we can deny that there is any likelihood of a collapse into chaos with something very close to certainty, the 'progress of experience' having 'dissipated the doubt' that might have hung over the universality of the law of causation in those days 'before there were sufficient grounds for receiving it as a certainty' (SL, p.574). Then with a dash of nineteenth century confidence Mill declared in a note inserted in the 1872 edition of the Logic that:

the number of natural agencies in this part of the universe known to us is not incalculable, nor even extremely great; ... we have now reason to think that at least the far greater number of them ... have been made sufficiently amenable to observation, to have enabled us actually to ascertain some of their fixed laws; and that this amount of experience justifies the same degree of assurance that the course of nature is uniform throughout, which we previously had of the uniformity of sequence among the phenomena best known to us (SL, pp.576-77).

In the same note of 1872, Mill also set out to refute the contention he attributed to Reid, Stewart and W.G. Ward that, 'whatever knowledge experience gives us of the past and present, it gives us none of the future,' declaring that, 'I see no force whatever in this argument' (SL, p.577).<sup>3</sup> If one takes the argument at issue to be Hume's argument, here is more evidence that Mill failed to grasp what Hume was saying, for however one responds to that argument, one can hardly dismiss it as airily as that. Mill simply saw nothing amiss with the notion that past experience offers a wholly reliable guide to the future. Joseph Priestley, he contended, had settled the issue by pointing out that 'though we have had no experience of what is future, we have had abundant experience of what was future' (ibid.). Our predictions about the future, he continued, are invariably found to be verified by experience when the experience comes. Mill's treatment of the issue displays very clearly his insensitivity to Hume's problem. Let it be granted to Priestley and Mill that 'present futures' are constantly becoming 'past futures,' and that we have so far found that predictions we have made about what was presently future, presupposing uniformity, have, when those futures arrived, been seen to be correct. Yet, properly considered, this past experience of the correctness of

predictions is not a sufficient ground for confidence that our predictions about what is future to us now will turn out equally reliable; for there is a sound inductive argument from the past correctness of predictions to the future reliability of predictions only if the patterns of uniformity that have hitherto held continue to hold; but it is precisely this assumption that they will hold that Hume recognised we are unable to defend rationally - and this is a point that Priestley and Mill failed to see because they were concerned not with Hume's problem but different ones. Priestley, Mill and their opponents assumed that knowledge of the future is possible, warranted by the uniformity of nature - a uniformity which they agreed could be known with certainty, though they disagreed about the source of that knowledge. The moral of Hume's discussion, by contrast, is that there is no adequate warrant for the belief in the continuing uniformity of nature, and hence no warrant for any of those beliefs which presuppose it.

### III

Two reasons why commentators may have misunderstood Mill on induction are that he did admit that it is hard to establish just what patterns of regularity in nature we are rationally entitled to expect, and that he thought it incumbent on him to spend a whole chapter discussing the grounds of our belief in the law of causation. That he engaged in such tasks might appear to indicate that he believed the uniformity of nature to be suspect in the light of the Humean argument; however, a close reading of the text does not bear out this interpretation.

The first of these tasks, that of isolating trustworthy patterns of regularity, is concerned with justification in the first of the senses earlier distinguished - that is, sense (A) - and Mill approached it in a largely perceptive manner. He did not betray any doubt that nature is, in a degree to make possible the practice of induction, a regular affair, but he noted that 'the proposition, that the course of nature is uniform, possesses rather the brevity suitable to popular, rather than the precision requisite in philosophical language,' and that 'Every person's consciousness assures him that he does not always expect uniformity in the course of events' (SL, p.311). We do

not, for instance, believe that the succession of rain and fine weather will be the same every year, or that we will have the same dreams every night. 'The course of nature,' said Mill, 'is not only uniform, it is also infinitely various' (ibid.), and in another place he observed with a touch of hyperbole that, 'The order of nature, as perceived at first glance, presents at every instant a chaos followed by another chaos' (SL, p.379). Moreover, some instances of induction that have been felt to be trustworthy have later been discovered to have led to false conclusions, as, for example, the argument to the conclusion that all swans are white; yet sometimes we are prepared to reason with great confidence to a generalisation on much less evidence than was had of white swans, as when a chemist in a single experiment determines the properties of a newly discovered substance that we thereafter trust will be found in every sample of that substance (SL, pp.313-14). Mill rightly noted that he who would construct a 'scientific theory of induction' (the task K. Campbell upheld as the 'genuine problem of induction') should ponder cases like these, and seek to establish the conditions under which sound generalisations can be offered. The 'problem of induction,' Mill concluded, which even the wisest of the ancients could not solve, was to answer the question: 'Why is a single instance, in some cases, sufficient for a complete induction, while in others, myriads of concurring instances, without a single exception known or presumed, go such a very little way towards establishing an universal proposition?' (SL, p.314). Such a problem can only be set up on the assumption that nature basically possesses a large degree of uniformity - that it has, so to speak, a 'deep structure' of uniformity beneath its often confusingly complex 'surface structure.' This is Mill's assumption, but not, of course, Hume's.

The name of 'empirical laws' can be given, Mill wrote, to 'those uniformities which observation or experiment has shown to exist,' but which cannot wholly be relied on 'in cases varying much from those which have been actually observed, for want of seeing any reason why such a law should exist' (SL, p.516). Such laws we can in principle expect to be able to explain in terms of more ultimate laws concerning universal causal relations, but, before we have achieved this kind of explanation of an empirical regularity we must maintain a healthy caution about whether it is likely to hold in cases spatially or temporally distant from those we have observed. It can even happen sometimes that the greater the understanding we obtain of the causal basis for an empirical regularity, the more we are inclined to cir-

cumscribe the limits within which we expect it to hold; thus the more we learn about the causal background to the movements of the heavenly bodies, the less willing we become to expect that the pattern of alternation of day and night that we have observed to hold so far will continue to hold for all time. In Mill's opinion, we are unwise to venture to affirm that regularities we have observed concerning tides, weather conditions, the expansion of bodies by heating, the poisonousness of substances containing a high proportion of nitrogen, and many others, will be maintained in cases which are not temporally and spatially 'adjacent' to those already experienced (perhaps one far distant day, changes in movements of the bodies in the solar system will cause the pattern of tides on Earth to alter; or maybe some new substance discovered by chemists will be found non-poisonous even though it contains a lot of nitrogen). On the other hand, there is no such problem with regard either to inductions concerning 'ultimate laws,' which can be expected to hold always and everywhere in a strictly uniform fashion, or to those about the maintenance of empirical regularities in 'adjacent' cases: thus, 'We have ... the warrant of a rigid induction for considering it probable, in a degree indistinguishable from certainty, that the known conditions requisite for the sun's rising will exist to-morrow' (SL, pp.516, 551). In no part of this discussion is there any awareness of the Humean grounds for scepticism about induction; throughout his account of the perils of extrapolating empirical regularities to non-adjacent cases Mill was quite unmotivated by any thought that there was something problematic about the belief in ultimate uniformity. <sup>4</sup>

The second reason why commentators may have thought that Mill meant to justify inductive reasoning in general against sceptical doubts is that he devoted Bk.III.ch.xxi to an explanation of the grounds of our belief in the law of causation - his 'axiom of induction.' It might seem that there would be little point in his taking the trouble to write this chapter if he were really convinced that the belief in the law was beyond sceptical attack. In fact, his intention was quite different: he wished to take advantage of another opportunity to counter the a priorist school that sought to explain some of our most important conceptions about the nature of things, logic, mathematics and morality by means of rationalist theories of non-empirical, a priori apprehensions. Mill was, by contrast, the single-minded empiricist, aiming to drive a priorism even from its bastions in the philosophies of logic and mathematics. When in the Logic and elsewhere

he argued the case for laws of logic and mathematics being empirical in character, it was not because he, or anyone else, thought the truth of those laws needed defending against sceptics; his purpose was rather to destroy the notion that their truth was to be established by pure intellect without the assistance of experience.

Similarly, the purpose of Bk.III.ch.xxi was not to defend the law of causation against any doubts about its truth, but to vindicate the thesis that our knowledge of it is empirically grounded. The target of Mill's criticism was identified early in the chapter: it was 'the school of metaphysicians who have long predominated in this country,' and who have affirmed that:

the universality of causation is a truth which we cannot help believing; that the belief in it is an instinct, one of the laws of our believing faculty. As the proof of this, they say, and they have nothing else to say, that everybody does believe it; and they number it among the propositions, rather numerous in their catalogue, which may be logically argued against, and perhaps cannot be logically proved, but which are of higher authority than logic, and so essentially inherent in the human mind ... (SL, p.563).

After this sarcasm, which was probably directed chiefly against Reid and Stewart, though they are not named, Mill proceeded to make some acute remarks about evidence which anticipate Wittgenstein. Our beliefs, he insisted, cannot be looked on as self-certifying. Rational beliefs have to measure up to some kind of outward standard, something independent of the mere fact of their seeming right:

Belief is not proof, and does not dispense with the necessity of proof ... To say [as the a priorists do] that belief suffices for its own justification is making opinion the test of opinion; it is denying the existence of any outward standard, the conformity to which constitutes its truth (SL, p.564).<sup>5</sup>

In Bk.III.ch.xxi, Mill was fighting a battle in his continuing war against the a priorists, not attempting to refute Humean scepticism. It was not the thesis that uniform causation is in principle incapable of being established as a rational belief, but the a priorist thesis that belief in it is, in Stewart's phrase, a 'principle of our constitution' (Stewart, vol.5, p.101), to which Mill was responding in the chapter.

Yet at the beginning of the same chapter occurs a passage that has surely misled many readers into thinking that Mill intended primarily

to discuss Humean scepticism about induction. As the passage is an important one, I shall quote it in full:

But is this assumption [sc. of the law of causation] warranted? Doubtless (it may be said) most phenomena are connected as effects with some antecedent or cause, that is, are never produced unless some assignable fact has preceded them; but the very circumstance that complicated processes of induction are sometimes necessary, shows that cases exist in which this regular order of succession is not apparent to our unaided apprehension. If, then, the processes which bring these cases within the same category with the rest, require that we should assume the universality of the very law which they do not at first sight appear to exemplify, is not this a petitio principii? Can we prove a proposition, by an argument which takes it for granted? And if not so proved, on what evidence does it rest? (SL, p.563).

Mill here claims that a petitio threatens if we assume phenomena to be subject to a law of uniform causation that we should not take to be a law unless we are entitled to be sure that there are no exceptions to it. This claim certainly seems very close to that frequently made in discussions of Hume's problem that we have no right to affirm uniform causation outside the narrow realm of phenomena we have experienced. This conventional complaint that we can only beg, not prove, the question in favour of uniform causation seems to be just the objection which Mill was making. So how can it be said that he was insensitive to Hume's problem?

Despite surface appearances, it was not Hume's problem that Mill was concerned with in this passage. Later pages of the chapter make quite plain that he did not intend to cast any doubt on the thesis that our experience provides massive evidence for the general prevalence of uniform causal relations, and in fact puts that thesis into the camp of certainties. The problem Mill was raising in the passage quoted is one of more limited scope than those inclined to find in him an awareness of Hume's problem would suppose: it is the problem of whether we are justified in carrying our belief in the existence of underlying uniformity of causal patterns even into those realms where we are at first hard put to it to detect any regularity; that is, whether we may legitimately persist in the search for ordering principles in areas that initially defy us to find any. But this is

still a question about the justification of induction in sense (A). Can we without begging the question, Mill was asking, justifiably deny that there are in nature any random events? His answer was that even in the difficult cases, we may rationally, and without petitio, assert that the law of causation holds, on the inductive basis - and note that he betrayed no diffidence about the soundness of this inductive argument - that the course of scientific research has so far provided no grounds for doubting that all phenomena are governed by causal laws, the tendency of previous investigations being always to lead to the discovery of causal regularities; it has not yet proved necessary, and so it is not likely in the future to prove necessary, to postulate the existence of any random events. 'When every phenomenon,' wrote Mill,

that we ever knew sufficiently well to be able to answer the question, had a cause on which it was invariably consequent, it was more rational to suppose that our inability to assign the causes of other phenomena arose from our ignorance, than that there were phenomena which were uncaused ... (SL, p.574).

Discoveries in physics since Mill's death have proved wrong his expectation that science would never uncover indeterminacy in nature, and yet that expectation was not an unreasonable one in the light of the rapid advances of the science of his day; assuming the soundness of inductive argument, it was quite rational for him to infer that human ignorance rather than any intrinsic randomness in things was the correct explanation of the fact that for some classes of phenomena deterministic laws could not (yet) be stated.

#### IV

Also amenable to serious misinterpretation if approached in the false belief that Mill meant to respond to the Humean problem of induction is the first section of Bk.III.ch.iii, 'Of the Ground of Induction.' Mill began, as we have seen, by asserting that the uniformity of nature is presupposed in every induction (SL, p.306). This assumption, he went on, is a warranted one, as we see if we consult the actual course of nature. But next:

Whatever be the most proper mode of expressing it, the proposition that the course of nature is uniform, is the



fundamental principle, or general axiom, of Induction. It would yet be a great error to offer this large generalization as any explanation of the inductive process. On the contrary, I hold it to be itself an instance of induction, and induction by no means of the most obvious kind. Far from being the first induction we make, it is one of the last, or at all events one of those which are latest in attaining strict philosophical accuracy (SL, p.307).

This passage is a chief source of the interpretation of Mill as attempting an inductive justification of induction. And it must be confessed that the interpretation draws much plausibility from this passage and its context. For Mill has said that the belief in uniformity is warranted, and then has claimed that it is itself a product of inductive reasoning; so it is natural to think that he must have considered that induction could somehow supply its own justification. If one thinks this, one's next thought is likely to be that Mill has chosen a perfectly hopeless way to defend induction, and one will be amazed that he could have failed to grasp the crass circularity of his strategy after he had devoted so much sensitive discussion in earlier pages of the Logic to the related fallacy of petitio principii in regard to deductive logic. <sup>6</sup>

But there is another interpretation that is preferable because it renders Mill's position much more intelligible. Like his predecessors, he simply failed to see that it may be questioned whether inductive inference is in principle trustworthy; he assumed, as they had done, that it is trustworthy. Even so, one will want to press the question why at this stage it did not become apparent to him that there was something wrong with maintaining that the warrant for inductive reasoning is an inductively warranted uniformity principle; surely the circularity of the position he was putting forward had now become inescapably evident. So, even if it had not been apparent before, Mill should have realised here that there is more of a problem about the justification of inductive reasoning in principle than he had suspected.

This line of thinking falls down, however, because it disregards the special and unusual sense which Mill gave to the claim that the uniformity of nature (or the law of causation) warrants inductive reasoning. No charge of circularity can be laid at Mill's door in the present context, because he never supposed that a uniformity principle, as a universal proposition, featured as a premise (of a standard sort) of a justificatory argument; in his view, it was not available

in advance as a proposition which could serve in the support of particular inductions, but was itself proved along with them. As we shall see below, this raises the sharp question of what he really did mean when he held that uniformity warrants inductions. But it is at least clear that he did not mean anything which could invite a charge of circular reasoning - whatever other objections might be raised against his view.

Resolution of this misunderstanding enables a sounder reading to be given of the passage at p.307 of the Logic. The purpose of this and the ensuing discussion was not to provide an inductive justification of induction in answer to Humean scepticism, but to guard against the false impression that the uniformity principle is the axiom of induction in the sense of a principle that has to be present to consciousness if a person is to be able to make inductions. If this were so, then the substantial objection could be made to Mill's position that as the content of the principle is too sophisticated for it to be remotely plausible to claim that it could be the earliest of a person's inductions, it is obscure how his first inductions could rationally come to be made (or, indeed, be made at all). Mill's predilection for an empiricist explanation of the belief in uniformity in opposition to the a priorist explanations of Reid and Stewart had produced a need for a justification of induction of type (B): a justification, that is, of a person's early inductions, made before he can possibly be aware (via induction) of the general causal uniformity holding in the world. As Mill plausibly said, a conviction of the existence of general uniformity is secondary, in the order of evidence, to the discovery of uniformities in particular contexts:

We should never have thought of affirming that all phenomena take place according to general laws, if we had not first arrived, in the case of a great multitude of phenomena, at some knowledge of the laws themselves ...

(ibid.).

The uniformity principle is a generalisation about generalisations, and some people doubtless never attain to any kind of explicit awareness of it. At most, in Mill's opinion, it could be the guiding force behind the making of inductions at the cutting edge of scientific research.

And yet the uniformity of the causal relationships in nature, if it is not a principle often consulted in the making of inductions (and not at all before a person has grasped - if indeed he ever grasps - that nature has a uniform structure), remains the fundamental warrant

of all inductions. How it can serve in this role is the question about the justification of induction I labelled (C), and it can be seen that in Mill's view it absorbs question (B) as a special case. Inductions made without explicit reference to the uniformity principle can still be warranted by it, because it is not a necessary condition of its providing such warranty that it be known in advance. (In fact, given Mill's position on the subject of syllogistic petitio, it cannot, as a major premise, strictly speaking be known at all in advance of the conclusions it supports.) But now, just how does it warrant inductive reasonings?

Mill's answer to this question involves a direct application of the theory of reasoning and the syllogism developed in Bk.II:

As Archbishop Whately remarks, every induction is a syllogism with the major premise suppressed; or (as I prefer expressing it) every induction may be thrown into the form of a syllogism, by supplying a major premise. If this be actually done, the principle which we are now considering, that of the uniformity of nature, will appear as the ultimate major premise of all inductions, and will, therefore, stand to all inductions in the relation in which, as has been shown at so much length, the major proposition always stands to the conclusion; not contributing at all to prove it, but being a necessary condition of its being proved; since no conclusion is proved, for which there cannot be found a true major premise (SL, pp.307-08).

Mill explained carefully what he understood by the Whatelyan idea that an induction is a syllogism with the major premise suppressed. We can argue by a sound induction from the mortality of John, Peter and other individuals to the mortality of all mankind, and need no other premises for our inference than the propositions about the mortality of the sampled individuals. But we can, if we choose, throw our argument into syllogistic form by inserting a major premise, in the following manner:

John, Peter, etc., are mortal,

What is true of John, Peter, etc., is true of all mankind,  
therefore

All mankind are mortal. (cf. SL, p.310).

The major premise 'What is true of John, Peter, etc., is true of all mankind,' while not essential to the proof of the conclusion according to Mill, serves a useful purpose as a kind of signpost to the conclusion our premises entitle us to draw; and if it were false, that

conclusion would not be a safe induction from the premises. Such a major premise could usefully be termed (though Mill does not so term it) a 'local uniformity principle.' Like the general principle of the uniformity of nature, local uniformity principles should not be regarded usually as more than approximations to the truth, as it is quite possible that sampled members of a class may have a property (for instance, John, Peter and other men in our sample may all have the property of being right-handed) which some members of the class lack. Yet we might agree with Mill that local uniformity principles do play a legitimate role in our thinking, though we should be suitably guarded about how absolutely we take them.

But how are local uniformity principles justified? By reference to the overall uniformity of nature, said Mill:

The real proof that what is true of John, Peter, &c.  
is true of all mankind, can only be, that a different  
supposition would be inconsistent with the uniformity  
which we know [sic] to exist in the course of nature  
(ibid.).

When he wrote that the uniformity principle is the 'ultimate major premise of all inductions' (SL, p.308), what he presumably meant was that local uniformity principles can be represented as the conclusions of syllogistic arguments of the following type:

All propositions of the form (A): 'If sampled members of class  
C are F, then all members of C are F' are true,  
The proposition (B): 'What is true of John, Peter, &c. is  
true of all mankind' is a proposition of form (A),  
therefore  
The proposition (B) is true.

The major premise here is a rendering of the general principle of the uniformity of nature. (It was at this point that Mill candidly admitted that the notion of uniformity needs to be handled rather carefully, and called it 'the problem of induction' to refine our understanding of the ultimate uniformities of nature that underlie the confusing surface mixture of constancy and flux (SL, p.314).)

Although Mill followed Whately in asserting that inductive inferences can be thrown into syllogistic form by interpolation of a suitable major premise, he was not aiming thereby to represent the major premise as a premise of a proof; rather, it is itself supported by the same evidence about individual cases which directly supports the conclusion. We have seen in Chapter Three what Mill intended by such a view, and what its drawbacks are. The basic difficulty is that Mill's

refusal to allow universal propositions to function as premises, and his insistence that 'real' inference is always from particulars to particulars, leaves him without any effective criterion for distinguishing rational inductive projections from irrational ones. The exclusion of universal propositions from the process of proof proper entails the exclusion of considerations of lawlike regularities which are an essential component of rational inductive thinking. In a vain attempt to counter this objection, Mill professed himself happy to countenance universal propositions in the ancillary role of 'memo-randa' or 'checks on inference'; but this was to no avail, as his anxieties about syllogistic petitio and his resulting determination to hold that universal propositions could only be proved along with particular conclusions from the same evidence, made it impossible for them to play any real role in justifying inductive conclusions.<sup>7</sup>

Yet in Bk.III, Mill proposed that the uniformity of nature is the 'fundamental principle' of induction (SL, p.307), and urged that the 'proof' of local uniformity principles is that their denial would be inconsistent with the general uniformity principle (SL, p.310). But what substance is there to these claims if generalisations about uniformity can function only in the restricted manner in which he argued major premises always do function? The only positive suggestion Mill offered here was that while uniformity principles do not contribute to the proof of inductive conclusions, they are a 'necessary condition' of their being proved, since, as he held, 'no conclusion is proved, for which there cannot be found a true major premise' (SL, p.308; cf. p.310). If a major premise is a premise only in name, and not in real function, then the sense which has to be given to Mill's talk about necessary conditions of proof is that the premises of an inductive argument support a 'particular' conclusion only if they support the universal proposition which subsumes it. (Thus, the mortality of John, Peter, etc., is good inductive evidence for the mortality of the Duke of Wellington only if it is good inductive evidence for the mortality of all men.) It is not, however, that one needs to reflect, when engaging in inductive reasoning, whether one's evidence would support a universal conclusion; what is necessary is just that it would in fact do so. Mill's point appears to be that were nature not uniform, induction would not work (an observation which, if considered more fully, might have led him to grasp Hume's problem); yet legitimate inductive inference can proceed without reference to uniformity. The answer to question (C) is, then, that the truth of the principle of the uniformity of nature is the fundamental condition of

the success of inductive reasoning, though it is not necessary to consult the principle in one's actual inferences.

But it is at this juncture that Mill's peculiar theory of reasoning leads him into substantial error. For despite his admission that uniformity is a condition of the success of induction, he is prevented from giving this consideration due weight by his conviction that the legitimacy of inductive inference cannot, on pain of petitio, depend on prior presumption of the truth of any principle which would enter an argument schema as a major premise. A universal proposition - even that asserting the general uniformity of nature - cannot, Mill has convinced himself, offer in any ordinary sense a justification for drawing a conclusion about an individual case; the only real justification for either proposition is the inductive evidence on which they both alike rely. The uniformity of nature, Mill held, is, like other universal propositions, reached by inductive reasoning not in advance of, but along with the 'particular' conclusions (in the case of the general uniformity principle, these are local uniformity principles) supported by the same evidence. Therefore, although Mill talked of major premises figuring as necessary conditions of the soundness of inductive arguments, he persistently recoiled from admitting that they possess any kind of potential to justify their conclusions, which he took to belong alone to the inductive premises.<sup>8</sup> Clearly there is something very unsatisfactory about this position, but he probably missed seeing this because he never really doubted that inductive reasoning is a sound form of inference; thus even when he spoke of the uniformity of nature as the 'fundamental principle' of induction, he felt entitled to propose without qualms that this was itself an inductively established truth - albeit one which then throws light on the condition under which inductive inference will be fruitful. Within Mill's philosophical scheme, the soundness of inductive reasoning in principle (though with a qualification on the score of problem (A)) stands as a cornerstone, and while its conditions of operation are held to be worth some explanation, its basic legitimacy is never up for question.

A significant passage in the Logic runs:

The assertion, that our inductive processes assume the law of causation, while the law of causation is itself a case of induction, is a paradox, only on the old theory of reasoning, which supposes the universal truth, or major premise, in a ratiocination, to be the real proof of the particular truths which are ostensibly inferred

from it. According to the doctrine maintained in the present treatise, the major premise is not the proof of the conclusion, but is itself proved, along with the conclusion from the same evidence (SL, p.572).

Were one to take this in isolation, one might well suppose that Mill was talking about the difficulty ('paradox') involved in attempting to justify inductive reasoning by reference to the law of causation (equivalent in Mill's view, it will be recalled, to the uniformity of nature), when this law is itself a product of induction. But the context shows once again that this is not his intention. As usual, there is no indication that Mill has the slightest doubt about the soundness in principle of inductive reasoning, and there is no attempt made to justify it. Even though the claim is repeated that the law of causation is something which our inductive inferences 'assume,' he comes no closer than at any other time to holding that the truth of the law has therefore to be settled before inductive inference can be declared legitimate. This law, he reiterates, is one which becomes inductively established over the course of time (SL, pp.572-75); and it is evident that in speaking of a 'paradox,' he intends again to refer to problem (B) about induction, namely, how people can make legitimate inductions before the 'axiom of induction' has been established.

One might grant to Mill that the overall uniformity of nature need not be thought about in every sound inductive argument (though it is less clear that sound inductive inferences can proceed without reference to local uniformity principles). But this recognition does not relieve him of the onus of providing a clear account of what he meant by talking of uniformity as a 'necessary condition' of sound inductive reasoning. It is natural to understand this to mean that without the existence of uniformity (irrespective of whether uniformity is thought about or not), inductive conclusions would not be justifiably reached. So, for each inductive argument which is sound, a syllogistic structure of just the sort Mill describes could in principle be produced, with a major premise expressing a uniformity - but a major premise which functions in the conventionally understood sense, and assists in warranting the conclusion. But of course Mill's theory of the syllogism and of the place of universal propositions in reasoning led him confidently and repeatedly to assert that uniformity does not warrant inductive inferences in the manner in which a genuine premise of a suasive argument serves in warranting the conclusion. But this means

that he did not have an intelligible account to offer of the sense in which uniformity is a 'necessary condition' of successful inductive inference.

Hamstrung by his faulty theory of inference, Mill remained unable to take the measure of his own insight that uniformity is a precondition of successful inductions. He believed this could not mean that inductive reasonings are justifiable by an appeal to uniformity as a premise, on pain of committing a fallacy of petitio. But if the defence of inductive inference cannot cite the uniformity of nature as a supporting principle, it remains quite obscure what could be meant by holding that if nature were not uniform, induction would not be successful. Yet apparently Mill was never struck by the difficulties of construing, in the light of his theory of inference, his claim that uniformity is a necessary condition of truth-attaining induction. Had the problems occurred to him, it is possible that he might have been inspired to doubt the correctness of that theory of inference; and if he had questioned the adequacy of that theory, he might then have apprehended the existence of the Humean problem of induction! But unfortunately this chain of reflection never occurred to him.

#### Appendix

Mill's insensitivity to the Humean problem of induction is easier to understand once it is realised that his predecessors and contemporaries were equally unmoved by it; the problem was simply not one of those in the air when Mill wrote. It was not that Hume's discussions in the Treatise and the First Inquiry were unknown to philosophers, but rather that they were seen as posing a primarily psychological question about the mental processes at work in inductive thinking; Hume's sceptical critique of induction was either not grasped at all, or grasped so slightly that it was felt it could be dismissed as insane.

George Campbell regarded the proposition that 'The course of nature will be the same to-morrow, that it is to-day' as one to which it is 'impossible ... for a rational creature to with-hold his assent,' and cited Buffier as his authority that to doubt such a proposition is 'insane' (G. Campbell, vol.1, pp.113-14). And if a man, said Campbell, should tell you 'with a serious countenance, that the sun which sets



to-day will never rise again upon the earth,' that might indeed raise doubts in your mind, but only 'doubts as to the soundness of the man's intellects' (ibid., pp.160-61). Although he treated Humean scepticism with ridicule, Campbell probably came closer than his successors to grasping the main intention of Hume's discussion. Dugald Stewart seems not to have apprehended that Hume's treatment of induction had a sceptical tenor at all, taking the issue between himself and Hume to be simply whether the expectation of 'the permanence or stability of the order of nature' arises from the association of ideas or, as Stewart believed, it is an original principle of our constitution (Stewart, vol.5, pp.101ff.; cf. vol.3, p.158). Thomas Reid likewise missed the point of Hume's discussion, apparently believing that the Treatise account of induction was a kind of reductio argument against the hypothesis that the belief in uniformity is reached by reasoning from experience (as, for instance, Joseph Butler had held (Butler, pp.20-21)); the moral of Hume's account, on Reid's view, was that 'our belief of the continuance of nature's laws ... is an instinctive prescience of the operations of nature,' upon which 'not only acquired perceptions, but all inductive reasoning, is grounded.' In other words: 'Antecedently to all reasoning, we have, by our constitution, an anticipation that there is a fixed and steady course of nature' - which enables us to carry on inductive reasoning, about whose legitimacy in principle Reid did not entertain the least anxiety, never doubting the uniformity of nature (Reid, p.199).

Philosophers of the earlier nineteenth century came no nearer to the crux of Hume's discussion. Sir William Hamilton produced a typically opaque theory, probably intended to be similar to those of Stewart and Reid, to the effect that inductive arguments, while not being valid by deductive laws of thought, yet achieve the status of being 'formally legitimate' by being clothed with a subjective necessity (Hamilton (1865), vol.2, p.344). Hume would have been unimpressed by this. Thomas Brown rightly understood that Hume had shown that experience:

which is of the past alone, does not render the extension through futurity less indefinite, nor the future itself a more distinct object of our knowledge. It leaves us the past, which we know, and the future, which we do not know (Brown (1818), pp.355-56).

But this did not matter to Brown, for there remained intuition to do the job of revealing the future to us: 'it is intuition only,' he continued in some singularly purple prose, 'that passes over the

darkness which is impenetrable to our vision, and speaks to us, as from another world, of the things which are beyond' (*ibid.*, p.356). I do not think we should treat this as just a particularly bad attempt to answer Hume; it is too stunningly insensitive to the epistemological issues which Hume raised, and is better looked on as a further contribution, though a weak one, to a continuing psychological debate about the explanation of inductive reasoning. A similar judgement should be made of the account offered by Samuel Bailey. He argued that the uniformity of nature must be 'necessarily assumed or taken for granted,' as Hume had demonstrated that it could not be inferred from any other truth. But he went on very revealingly to remark that what Hume had done was to show that there was 'a step taken by the mind which required explanation' (Bailey, pp.195, 198; my emphases); once again, it is a psychological rather than an epistemological question which Hume is taken to have brought up for discussion; and that he intended to cast the most fundamental kind of doubt on whether anything could provide a suitable warrant for our inductive projections is not noticed.

Kant took Hume's reflections on causation and induction extremely seriously, and declared that it was these which awakened him from a 'dogmatic slumber' of many years (Kant (1915), p.7); and he criticised other philosophers for misreading Hume. But even Kant took the main point at issue to be that of the origin of the conception of causation as involving necessity, and he thought Hume wrong in consenting to recognise no more than a mere force of habit to draw causal inferences. This does justice to Hume's claim that we cannot rationally derive from experience alone a belief in objective causal necessity, but it is not clear whether Kant fully grasped the fact that Hume was contending that inductive arguments were, strictly, without justification; it may be that he too thought that Hume was mainly puzzling about the psychological machinery involved in the practice of an unquestionably sound mode of inference, and which he himself explained in terms of the theory of the categories of the understanding.

William Whewell's position is obscure. He treated Hume less simplistically than other British philosophers did, but it is still not clear that he had more than the vaguest idea that there was more to Hume's treatment of induction than merely psychological analysis - it is significant that he was no more inclined than others were to suppose that the rationality of our inductive practices could seriously be called into question. Whewell had a complex theory to explain our inductive practices, a neo-Kantian story of the imposition

of order on experience in accordance with certain 'Fundamental Ideas' we bring to bear on it; the universality of the laws of motion, for instance, is not something contributed by experience but is 'implied in the nature of knowledge' - they gain their 'form' from the 'Idea of Causation' (Whewell (1847), Bk.III.ch.viii). But could we, asked Whewell, after seeing a thousand stones fall to the ground, find one that does not? His reply was that we could not even conceive this happening unless we could imagine 'some peculiar cause to support it' (Whewell, *ibid.*, vol.1, p.252). His reasoning for this was that 'our experience is bound in by the limits of cause and effect,' so that we can never even conceive of general causal laws as not existing for all the phenomena we encounter (*ibid.*, p.253). This smacks too much of cutting the Gordian knot for it to be plausible to ascribe to Whewell a proper appreciation of Hume's problem, even if he had some slight inkling of what it was. Mill could hardly have learnt what Hume's problem was from Whewell, but he would have regarded Whewell's psychological ideas as major targets for attack.

Before Hume, Sextus Empiricus knew that there was a problem about induction that cast doubt on its rationality. After Hume, the first philosopher I know of to display a clear grasp of it was T.H. Green, who by no coincidence was one of the editors of the 1874 reissue of Hume's works. Pointing out that in inductive reasoning we generalise from a sample to all instances of the kind of thing sampled, Green put his finger on precisely the point that Hume had seized on but which his successors had missed, namely:

But how do we know that the instances, with the examination of which we are always dispensing on the strength of the [inductive] rule, might not be just what would invalidate it if they were examined? (Green, vol.2, p.282).

Thus Green recognised that the central philosophical problem of induction is not to explain the origins of our conceptions about uniformity in nature, but to provide a satisfactory justification for the belief that uniformity will continue. Since Green's day, the latter problem has never been out of the philosophical limelight.

## FIVE

### LOGIC AND THE OBJECTIVE WORLD

#### I

'I can conscientiously affirm,' wrote Mill in closing the Introduction to the Logic,

that no one proposition laid down in this work has been adopted for the sake of establishing, or with any reference to its fitness for being employed in establishing, preconceived opinions in any department of knowledge or of inquiry on which the speculative world is still undecided (SL, pp.14-15).

Logic, Mill hoped, could provide a 'common ground' on which proponents of different views of 'ultimate facts' could 'meet and join hands' (SL, p.14). Differences on metaphysical questions could be laid aside when purely logical matters were up for discussion, the concern of logic being only with the validity of inferences and not with the truth of their premises (cf. SL, p.13).

Mill nevertheless admitted that in practice it is hard to develop a theory of logic wholly free of bias towards particular positions on metaphysical topics (SL, p.14), and his own leanings towards a radical form of empiricism led him in the Logic to take up distinctive opinions on such disputed subjects as necessity and the nature of physical objects and their attributes. The difficulty of preserving metaphysical neutrality arose, he suggested, because metaphysicians must all employ arguments whose validity 'falls under the cognizance of logic' (ibid.). That, however, is the wrong explanation: as he had himself recognised, logic, in so far as it is concerned purely with the validity of inferences, need not get involved with debating the truth of premises. The point is rather that logic as Mill conceived it is not a merely formal discipline; it is, he said, 'the science of the operations of the understanding which are subservient to the estimation of evidence'

(SL, p.12), and it provides not just a theoretical account of the conditions under which inference is valid, but also practical guidance in the pursuit of knowledge. But a logician with the aim of explaining how reasoning and the due consideration of evidence assist the search for truth can hardly remain neutral about the characterisation of the reality which is the goal of our truth-seeking, or about the kind of cognitive relations which it is in principle possible for us to have towards it. Logic this broadly understood will inevitably take stances, explicitly or implicitly, on what Mill termed 'speculative' matters.

Yet the commitments on ontological and epistemological issues one discovers in A System of Logic do not all take the direction one would have expected from a philosopher whose view of matter (which we shall explore later) as a 'permanent possibility of sensation' owed Berkeley for its major inspiration. Book I of the Logic does indeed contain a chapter, 'Of the Things Denoted by Names,' in which Mill's taste for an idealist metaphysic is clearly demonstrated. But the dominant commitment of the work as a whole is to a form of realism which is quite incompatible with idealism. This incompatibility between realist and idealist elements is not merely a flaw in the Logic but pervades Mill's whole philosophy of logic and reality. Surprisingly, he seems to have been wholly unconscious of its existence, and it is noteworthy that even in the Examination, where the idealism receives its fullest exposition, the chapters on the philosophy of logic still retain a realist tenor.

'Realism' is a favourite philosophers' term, but it has often been used very loosely. Recently, and largely under the stimulus of Michael Dummett, philosophers have become more careful in saying what realism does and does not involve. Dummett himself has written:

The primary tenet of realism, as applied to some given class of statements, is that each statement in the class is determined as true or not true, independently of our knowledge, by some objective reality whose existence and constitution is, again, independent of our knowledge (Dummett (1981), p.434).

The central tenet of a realist account of a class of statements is thus that the truth or falsity of statements in that class is determined by the way things are in objective reality, irrespective of any considerations about how human beings obtain knowledge of those statements. An anti-realist about some given area of discourse - for instance, an idealist or a constructivist - wants, as Dummett puts it, 'to

narrow the gulf between what makes a statement true and that by means of which we recognize it as true' (Dummett, ibid., p.443). Realists believe in a wholly determinate objective reality, accessible to our faculties of knowledge but ontologically independent of them; anti-realists, by contrast, view this or that aspect of reality as in whole or in part determined in its characteristics by human intellectual activity.

The realism which informs Mill's philosophy of logic is of a quite general kind; that is, it is realism about all statements without restriction of kind or content. It can be exhibited from a number of different angles, which each invite detailed consideration.

(A) Mill spoke quite explicitly of logic being concerned with the 'ascertainment of objective truth,' and proposed this as the crucial differentia of logic in distinguishing it from psychology (the latter study dealing with 'the analysis and laws of the mental operations') (EH, p.301). Logic, as the science of proof or evidence (SL, p.9), is of assistance to reasoners who pursue knowledge about a reality which, in this context, Mill never talked of as being other than objective. The importance of good reasoning, in his view, was that thought could misrepresent reality unless inferences were made according to sound principles. The person who does not take care to observe 'what relations must subsist between data and whatever can be concluded from them, between proof and everything which it can prove,' will unfailingly draw 'inferences which are not grounded in the realities of things' (SL, pp.10-11). Inferences, he insisted, could be 'rightly or wrongly performed' (SL, p.13), and the logician's task is to identify sound modes of inference - sound methods of 'interrogating nature,' as he put it in Baconian phrase in the review of Whately (WE, p.13) - in order to assist us in the pursuit of a truth which is not of our creation. An inferred belief is true, if it is so, in virtue neither of being inferred nor of being a belief, but rather in virtue of how the world is. The truth of propositions is determined by an external standard, by the relationship they bear to a reality outside the mind: if they represent that reality as it is, they are true; if they misrepresent it, they are false. Mill, in short, committed himself to a realist theory of error. Yet the presupposition of an objective, mind-independent world which is the backdrop to this cannot be squared with the anti-realist idealism which he espoused in other places.

It would be quite wrong to suppose that the realist strain is merely an occasional aberration on Mill's part. On the contrary, it is a constant feature of his writings on the philosophy of logic from

the review of Whately onwards. In the Logic he made it a crucial part of his defence of logical theory against those who accused it of triviality that it aids the ascertainment of true propositions, explaining truth as consisting not in any relation of a proposition to human ideas, but in its conformity to external fact (SL, pp.87-90). Some years later he wrote in the Examination that, 'If thought be anything more than a sportive exercise of the mind, its purpose is to enable us to know what can be known respecting the facts of the universe.' Judgements aim to express those facts, and because there exist connections 'between one objective truth and another,' logic is useful because it makes it 'possible for us to know objective truths which have never been observed, in virtue of others which have' (EH, pp.370-71). Such was Mill's settled view of the concern of logic with the discovery of objective truth.

Hilary Putnam has stressed the importance to a realist concept of truth of the acceptance of such sentences as:

Venus might not have carbon dioxide in its atmosphere even though it follows from our theory that Venus has carbon dioxide in its atmosphere (Putnam, p.34).

Mill's concept of truth involves the acceptance of just such statements; a belief of ours, no matter how sincerely held or how well supported by the evidence, may in principle still be false, because it may still misrepresent the character of reality. Mill would undoubtedly have acceded to Tarski's so-called 'Convention T':

(T) 'p' is true if and only if p,

and have construed it as expressing the realist claim that an assertion is true if and only if things are as it asserts them to be.<sup>1</sup>

The realist notion of a 'gulf' (to use Dummett's term) between what makes a statement true and that by which we apprehend its truth involves the notion of an objective reality existing independently of human mental activity. As we shall see when we come to examine Mill's understanding of the principle which he called, following Hamilton, that of the 'relativity of human knowledge,' he presented, as part of his radical empiricist program, strong reasons for withholding belief in such a mind-independent reality. Here he followed a line commonly encountered in contemporary debates between realists and anti-realists: the problem with positing a mind-independent, objective world, he suggested - as any modern anti-realist might suggest - is that in doing so we are operating beyond the bounds of our epistemic faculties (which are familiar only with sensible appearances). The surprising thing is that no such qualms about the limits of human knowledge

appear to have held him back from taking a realist position on the philosophy of logic. In this context Mill believed in an objective world about whose nature we could be mistaken, and which was in no sense reducible to the sensory presentations by which we come to knowledge about it.

(B) Further evidence of the realist strain in Mill is apparent in the evolution of his view of the nature of belief. From his empiricist forbears he had inherited a notion of belief as an inseparable association of ideas, and he seems to have remained reasonably content with this, as with most aspects of associationist psychology, until in the period following the composition of the Logic he began to reconsider this intellectual legacy more closely. But even in the Logic he expressed some doubts about the adequacy of the associationist explanation of belief:

If the question be whether Belief is a mere case of close association of ideas, it would be necessary to examine experimentally if it be true that any ideas whatever, provided they are associated with the required degree of closeness, give rise to belief (SL, p.855).

Sometime after the composition of the Logic, Mill's doubt about the associationist account sharpened as it occurred to him that it is not apparent how that account can make sense of the difference between believing something to be so and merely imagining it. Both, on the theory, could be the products of association, yet there is clearly some basic difference between them which cannot be explained simply in terms either of closeness of association or of vividness of the resulting mental content. What Mill had lighted on was what Bernard Williams has described by saying that it is a feature of believing that it aims at truth (Williams, pp.136-37); Mill put this somewhat less succinctly by asserting that, 'The difference between belief and mere imagination, is the difference between recognising something as a reality in nature, and regarding it as a mere thought of our own' (AN, vol.1, p.418).

Associationism, then, falls down by ignoring the truth objective of belief, and consequently the intimate connection between belief and evidence.<sup>2</sup> Mill summed up the matter very cogently:

... it may be said that if belief is only an inseparable association, belief is a matter of habit and accident, and not of reason. Assuredly an association, however close, between two ideas, is not a sufficient ground of belief; is not evidence that the corresponding facts



are united in external nature. The theory seems to annihilate all distinction between the belief of the wise, which is regulated by evidence, and conforms to the real successions and coexistences of the universe, and the belief of fools, which is mechanically produced by any accidental association that suggests the idea of a succession or coexistence to the mind ... (AN, vol.1, p.407).

'... facts ... united in external nature'; '... the real successions and coexistences of the universe'; - such phrases testify to a fundamentally realist view of belief; beliefs aim at truth of an objective kind, not in any way determined by the psychological principles (e.g. the laws of association of ideas) which may produce them. The order of reality, which we aim to capture in our beliefs, is an autonomous and mind-independent affair, to be sharply distinguished from the order of thought. No question about the truth of a belief could be settled by giving a description of the merely psychological conditions which produced it; what is important for the question about truth is the conformability of a belief to an objective reality, and in adjudicating its truth it is its evidential basis which must be considered. As Mill said in the review 'Bain's Psychology' of 1859, it is a 'strange anomaly' that some authors, after attempting to prove the existence of 'intellectual or moral instincts,' should 'proceed ... to legitimate and consecrate everything which those instincts prompt, as if an instinct never could go astray.' A complete theory of belief, he continued, must explain what it is which moderates the force of association, and 'subdues belief into subordination and due proportion to evidence' (BP, p.370). Once again, Mill was expressing his conviction of the existence of objective truth, which belief aims at, but does not always succeed in capturing. It does not follow from our believing that Venus has carbon dioxide in its atmosphere that it really does so.

(C) In both the Logic and the Examination Mill took issue with the view, whose best known proponent was Herbert Spencer, that the ultimate criterion that something is impossible is that its possibility is inconceivable to us. It is not important here to follow the details of the amicable but long-running debate between Mill and Spencer on the worth of the test of inconceivableness; both were willing to agree that 'axioms' (by which they meant the most fundamental propositions of deductive sciences) were learnt by induction from experience, but Spencer maintained that the inconceivability of its

negation was the chief test by which an axiom could be justified. Mill's objections to Spencer's position once again reflect the spirit of realism in his philosophy of logic.<sup>3</sup> He claimed that inconceivability may simply be the product of a strong association of ideas, and that examples can be cited of things which people have found inconceivable (e.g. the existence of Antipodes) on the basis of strong association which have later been found to be true (EH, pp. 67-68). But even more significantly:

... even assuming that inconceivability is not solely the consequence of limited experience, but that some incapacities of conceiving are inherent in the mind, and inseparable from it; this would not entitle us to infer, that what we are thus incapable of conceiving cannot exist. Such an inference would only be warrantable, if we could know a priori that we must have been created capable of conceiving whatever is capable of existing; that the universe of thought and that of reality, the Microcosm and the Macrocosm (as they were once called) must have been framed in complete correspondence with one another. That this is really the case has been laid down expressly in some systems of philosophy ... but an assumption more destitute of evidence could scarcely be made, nor can one easily imagine any evidence that could prove it, unless it were revealed from above (EH, p.68).

Mill was specifically attacking the philosophies of Schelling and Hegel here, but his conception of independent realms of reality and of thought is incompatible with the doctrine of the relativity of human knowledge which elsewhere prompted him to favour an idealist viewpoint.

## II

The thesis that Mill's philosophy of logic is fundamentally realist is likely to encounter opposition from those critics of his thought who have alleged that he committed what is often referred to as the 'psychologistic fallacy.'<sup>4</sup> Psychologism is an exceedingly hazy doctrine about logic, and as it has been understood by different

writers in diverse ways, it is often hard to be sure just what position is being ascribed to Mill when he is accused of it. At the core of most versions of psychologism is the claim, which can be construed and developed in various manners, that the laws of logic are primarily descriptive of human psychology; usually this is explained as meaning that logic describes the way in which human beings think - or, as Theodore Lipps famously put it, that 'Logic is the physics of thought.' <sup>5</sup> It must be admitted that some things Mill said do raise a reasonable suspicion that he was attracted to some form of psychologism. That he often spoke of the Laws of Identity, Contradiction and Excluded Middle as the 'laws of thought' is not good evidence that he inclined to psychologism, because in using this terminology he was, of course, simply following ancient tradition. But more significant is the following, often quoted passage from the Examination. Mill wrote that logic:

is not a Science distinct from, and coordinate with, Psychology. So far as it is a science at all, it is a part, or branch, of Psychology; differing from it, on the one hand, as a part differs from the whole, and on the other, as an Art differs from a Science. Its theoretic grounds are wholly borrowed from Psychology, and include as much of that science as is required to justify the rules of the art (EH, p.359).

This passage contains obscurities, particularly in its reference to the distinction between a science and an art, but it is not surprising that it has been taken as important evidence that Mill accepted some form of psychologism. The impression that he favoured a psychologistic view of logic is further encouraged by a passage following shortly afterwards. Defining the phrase 'the Form of Thought' as 'Thinking itself; the whole work of the Intellect,' he declared:

Logic and Thinking are coextensive; it is the art of Thinking, of all Thinking, and of nothing but Thinking. And since every distinguishable variety of thinking act is called a Form of Thought, the Forms of Thought compose the whole province of Logic (EH, p.360).

Before we look more closely at Mill's discussions of the connections between logic and thought, it is worthwhile posing the question how a psychologistic theory of logic would consort with other views he held. Psychologism, first of all, is not a form of idealism. It is not self-contradictory to affirm that logical laws are primarily descriptive of the way that people think, and to deny that there is

no objective, mind-independent reality. Nor is psychologism formally inconsistent with the claim that reasoning in accordance with logical laws advances knowledge about objective reality; which is to say, it is formally compatible with a realist philosophy of logic which accepts that thought is not always in accordance with reality, but maintains that thinking according to the canons of logic will maximise the probability of arriving at true conclusions about that reality. It is, however, inconsistent with any view that logical laws are about the features of objective reality (rather than the processes of thought).

Now while there is no formal contradiction involved in accepting psychologism and rejecting idealism, it is not at all easy for a defender of psychologism both to claim that logical reasoning assists us in the pursuit of truth, and to hold that the truth in question is truth about objective reality - two theses, it will be recalled, which Mill wished to maintain. There is a quite simple reason for the difficulty. If laws of logic describe patterns of human thought, why should reasoning in accordance with them have any tendency to improve our chances of attaining to true beliefs? If the structure of the world is independent of how it is thought about, then it is quite obscure what guarantee there could be that logical reasoning, as understood on the psychologistic picture, would produce true belief about it. At best, it would seem to be a happy accident if reasoning produced any genuine enlightenment about the objective, thought-independent world.

It would not be a satisfactory response to this line of argument to suggest that the laws of logic are psychological principles which have evolved in us over a long period of time, and which represent the fruits of a process of natural selection which has favoured these principles of mental working over possible rivals because they have proved best able to assist us in our interactions with the objective world. The weakness of this answer is that, while it might indeed be plausible to suppose that human intellectual as well as physical features might be the result of evolutionary mechanisms, a psychologistic account of what has evolved still leaves it quite unclear how reasoning logically can maximise the probability of our reaching true beliefs about objective reality. A disposition to reason according to logical laws could be a result of evolution, because logical reasoning does assist us in our interactions with the world by improving our chances of believing truths (true beliefs being undeniably more serviceable to us than false ones). But the value of evolving a disposition

to reason logically depends on logical laws expressing not merely regularities of thought (even regularities holding at the end of an evolutionary process), but in their having a meaning with a bearing on the character of objective reality (however in detail this should be explained). For if they expressed no more than the structure of thought, they could not apparently be of use in reasoning about the structure of things, which are the inhabitants of a world whose constitutive principles are not identical with the principles of mind. In short, psychologism, whether or not abetted by an evolutionary hypothesis, fails to be able to explain the link between thought and an objective world, because it cannot plausibly explain how logical principles can be useful in maximising true believing about a world with a thought-independent structure.

The best prospect for psychologism, therefore, lies in denying the existence of a mind-independent, objective reality and embracing an idealist metaphysic. If the structure of reality is not distinct from the structure of thought, there will be no problem about how logical laws, conceived as psychological principles, promote the attainment of true beliefs: they will express aspects of the structure of reality simply by virtue of expressing aspects of the structure of the thinking mind. The worry about how psychologism could explain the linkage of thought and the world evaporates if there is no link between two separate realms to be accounted for; logical laws, in being expressive of the workings of mind, are eo ipso directed onto reality. And not only does idealism provide an appropriate metaphysical backdrop for psychologism: psychologism presents a highly inviting philosophy of logic for anyone inclined towards idealism, because of its characterisation of logical laws as principles of mental working.

This recognition of the mutual affinity between idealism and psychologism naturally prompts the question whether Mill may have deliberately chosen to adopt a psychologistic theory of logic along with an idealist metaphysic, believing that in this way he could give his philosophy a satisfyingly unified character. But if this were so, what could be made of those passages in his writings where he seems to be defending the realist claim that the structure of thought and the structure of reality are quite distinct? Is it possible that he did not, after all, intend to maintain a realist view of logic, but merely expressed himself badly on some occasions?

Such an interpretation of Mill's intentions cannot be sustained by a careful reading of the texts. In my view, he did not subscribe to

psychologism in his philosophy of logic, and a fortiori did not attempt to conjoin psychologism with the idealist metaphysic to which at times he unquestionably did lean. Those statements in the Logic and Examination which have an apparently psychologistic tenor have in fact been misunderstood - in some cases excusably, in others not. Whether or not psychologism is a mistaken doctrine, it is not a Millian one. Mill's philosophy of logic is thoroughly realist, even though its realism is at odds with the idealist elements which also occur in his thought.

### III

Discussion of whether Mill was psychologistic in his approach to logic has to some extent been hampered by the lack of any clear general consensus on what detailed claims psychologism makes. R.F. McRae has suggested that as Mill's interest in logic was centred on the practical activity of reasoning - on inference (which is something people engage in) rather than on implication (a matter of formal relationships among propositions) - we might well wish to call his approach 'psychologistic' in recognition of his concern with human reasoning (McRae (1973), p.xlviii). While McRae is right to stress the practical orientation of Mill's philosophy of logic (though Mill could hardly neglect questions about implication in trying to tell a complete story about inference), it is not very helpful to stretch the already very slackly used term 'psychologism' to sum it up, particularly as McRae is not disposed to think that he intended a reduction of logic to psychology in any profounder sense. But if McRae's idea of psychologism fails to be clarificatory, an account of psychologism recently published by John Richards is seriously misleading. According to Richards, Mill must be considered a 'logical psychologist' because 'logical psychologism' involves two claims which he explicitly makes, namely the 'methodological claim' that, 'The logical laws are descriptions of experience and are to be arrived at through observation,' and the 'epistemological' one that, 'The logical laws are empirical generalizations. They are grounded in the experience of the subject, are not necessary, and hence, are a posteriori' (Richards, p.20). Apparently it is the reference to experience in these claims which leads Richards to regard them as expressive of a psychologistic position. Unfortunately, he misunderstands how Mill

intended that reference. For one thing, there is no justification for ascribing to Mill the belief that logical laws were 'descriptions of experience' in its subjective aspect - that is, were descriptive of the manner of experiencing rather than, more plausibly, of the reality experienced (a distinction quite slurred over by Richards). But further, there is certainly nothing at all psychologistic about saying that knowledge of logical laws has an experiential basis, unless this is very implausibly read as asserting, or implying, that what we know about, when we know logical laws, is the modes in which we experience reality. Mill meant his thesis of the experiential basis of knowledge of logical laws to be understood the much more straightforward way, as claiming that it is through experience that our knowledge of those laws is acquired (a reading which leaves quite in abeyance the question of what it is which logical laws express). Richards forgets that we might similarly speak of an experiential basis of our knowledge of contingent matters of fact, without meaning to affirm that factual knowledge is all knowledge about subjective modes of experience. It would be reasonable to regard as psychologistic a doctrine maintaining that logical laws are about experiencing - that is, that they are about the mode or manner of experience; but it is not this doctrine to which Mill is committed if he espouses the twin principles Richards ascribes to him; those claims in fact convey an empiricist position we can with much cogency attribute to him, but not a psychologistic one.

It is not to be psychologistic, either, to point out that there is a psychological story to be told about our belief in logical laws, as there is about any other of our beliefs. Whether the psychological account of belief in logical laws can, as Mill held, dispense with claiming the existence of special faculties of a priori intuition, and provide an explanation purely in terms of faculties of observation and generalisation, is a controversial question - but to assert that some psychological description of the processes responsible for our believing laws of logic must be right is not to take up psychologism. Much more plausibly termed 'psychologistic,' however, is the view that logical laws are reducible, in some sense, to psychological ones. The important question to ask about Mill is whether he accepted any such claim as this. If he believed that logical laws are not merely learnt in the course of experience (say, by natural and spontaneous psychological processes of observation and generalisation), but that those laws are actually about psychological features of human beings, then it would indeed seem that he embraced a form of psychologism.

But just how should the thesis that logic is reducible to psychology be understood? The most straightforward way of reading it which captures the spirit of psychologism is to take it to assert that logical laws really state regularities of believing. Thus the law of contradiction, which states that two contradictory propositions cannot both be true, really asserts, on a psychologistic interpretation, what is more explicitly conveyed by saying that people do not believe contradictory pairs of propositions. A possible objection to this construal is that while the law of contradiction is unquestionably true, it is less than obvious that people never believe contradictions. Inviting though this objection seems, it is not wholly clear that it is well founded. It is true, as Mill himself observed, that 'a person may, in one sense, believe contradictory propositions, that is, he may believe the affirmative at some times and the negative at others, alternately forgetting the two beliefs'; or he 'may yield a passive assent to a form of words, which, had he been fully conscious of their meaning, he would have known to be, either wholly or in part, an affirmation and a denial of the same fact.' Nevertheless, 'when once he is made to see that there is a contradiction, it is totally impossible for him to believe it' (EH, p.373). If this is right, it offers comfort to psychologism.<sup>6</sup> But even if people sometimes do believe direct self-contradictions (though at most this must surely be extremely rare), a bold defender of psychologism might claim that this only shows that the law of contradiction is not, after all, exceptionlessly true!

A more pressing problem for psychologism is that many laws of logic recognised by logicians would hardly be recognised by most people as being among their beliefs. (In fact, as there is an infinite number of logical laws according to standard philosophies of logic, many - especially more complex ones - are highly unlikely to have been believed, or even thought about, by anyone.) There are even laws of logic which a majority of people might naturally wish to disbelieve, or at least remain agnostic about, such as

$$(-p \supset p) \supset p,$$

the so-called consequentia mirabilis, or

$$p \supset (-p \supset q).$$

To secure his position, one response available to the defender of psychologism here is to draw a distinction between explicit and implicit beliefs, and to claim that while only logicians are in the habit of making their beliefs about logic explicit, others manifest the same



beliefs implicitly in their general intellectual behaviour. Someone who might reject the consequentia mirabilis were it set out explicitly before him could, on this view, be ascribed a belief in it if his thought structures as a whole implicitly relied on a system of logic of which this principle is an interdependent component. Even those logical laws which no one has explicitly formulated and recognised as true might be held to be implicitly believed by those who manifest behaviourally an acceptance of a logical system to which they belong. But if he had doubts about such a generous policy of belief ascriptions, a proponent of psychologism might attempt a strategic retreat to higher ground, and maintain that logical laws represent patterns of believing not of humanity en masse, but only of such people as display a certain fairly substantial level of self-consciousness with regard to those patterns. Belief in logical laws would now be ascribed only on the basis of a degree of reflective awareness and understanding of them; thus a belief in the consequentia mirabilis could probably be only rarely attributed, and the existence of logical laws of which no one had thought reflectively would be denied. But whether much advantage would be reaped by a defensive move of this kind is very doubtful. It is, in particular, left very vague just how much and what sort of reflective awareness is required for the ascription of beliefs in logical laws; if the conditions are made too strict, many people will implausibly be counted as being devoid of beliefs in the laws of logic altogether, while if they are made too easy to fulfil, the revised position collapses back into the earlier one.

If the psychologistic reductive thesis is not without difficulties, it is nevertheless not obviously an impossible doctrine. A common ground for ascribing psychologism to Mill is that his account of the origin of belief in the 'laws of thought' offers some appearances of accepting some form of reduction of logic to psychology. Whether this is so or not deserves some careful attention, though matters are made difficult by the sketchiness of his discussions of this theme in both the Logic and the Examination. 'The use and meaning of a Fundamental Law of Thought, wrote Mill, 'asserts in general terms the right to do something, which the mind needs to do in cases as they arise' (EH, p.374). Between the Logic and the Examination, to complicate the situation further, his ideas about the use and meaning of the laws of thought underwent some evolution, as he altered his opinion of their importance to thought. In the Logic, the law of identity (given in the form, 'Whatever is, is' (SL, p.175)) was characterised as trivial, the law of contradiction as fairly unimportant (SL, p.277), and the

law of excluded middle as true only in the case of meaningful propositions (SL, p.278) - a qualification which seemed to Mill to be a 'large' one, but which testifies to his thinly disguised desire to dethrone all these laws from the exalted position they held in philosophies which considered them as prime examples of necessary and a priori truths.<sup>7</sup> Disregarding the law of identity as being beneath notice, he claimed that the other two laws were generalisations from experience. In the Examination, the picture was altered in two respects: Mill had become willing to concede that the three laws of thought (even the law of identity) are truly fundamental to our thinking, as they encapsulate our most basic ideas about truth and falsity; and he no longer insisted upon the generalisation theory to account for our knowledge of them, suggesting as an alternative possibility that they are 'laws of our thoughts by the native structure of our minds' (EH, ch. xxi; p.381). Now a charge of psychologism can seem reasonable against Mill first of all because of the manner in which in the Logic he explained the arrival at the law of contradiction, and secondly because of the character of the alternative theory in the Examination of how the laws of thought are known.

The Logic's account of the law of contradiction is that it is, 'like other axioms, one of our first and most familiar generalizations from experience' (SL, p.277). Mill explained:

The original foundation of it I take to be, that Belief and Disbelief are two different mental states, excluding one another. This we know by the observation of our own minds. And if we carry our observation outwards, we also find that light and darkness, sound and silence, motion and quiescence, equality and inequality, preceding and following, succession and simultaneousness, any positive phenomenon whatever and its negative, are distinct phenomena, pointedly contrasted, and the one always absent where the other is present. I consider the maxim in question to

be a generalization from all these facts (SL, pp.277-78).

There are really two, complementary explanations here. The first and more elliptical one is that we come to believe the law because we find that we never believe and disbelieve the same proposition. The second is that experience informs us that certain pairs of 'phenomena' - e.g. sound and silence, light and darkness, etc. - are never co-instantiated, and from this we infer inductively that contradictory phen-

omena are never co-instantiated (Mill's belief that all propositions are subject-predicate in form leads him to take this conclusion as a fair rendering of the law of contradiction).

Both explanations limp badly. The former suffers from the fairly obvious drawback that a disposition not to believe and disbelieve the same proposition is far more plausibly viewed as presupposing knowledge of the law of contradiction than as preceding and explaining it; at the very least, Mill needs to do much more to defend his assumption that people in a state of logical innocence will refrain from believing and disbelieving the same proposition. The latter explanation encounters a similar difficulty by a different route. It is clear that Mill intended the pairs of phenomena sound/silence, motion/quietness and the rest to represent pairs of contradictory phenomena, the theory being that from repeated experiences of finding that contradictory phenomena are never co-instantiated, we naturally infer the general law of contradiction. But when are phenomena contradictory? Not merely when they are never co-instantiated, for some pairs of phenomena are never co-instantiated though they are clearly not contradictory; arguably, for instance, being happy and being mean, or being a man and being immortal, or containing sugar and being good for the teeth. To say that phenomena are contradictory when they are necessarily never found together would be profoundly unMillian; it would in any case be quite obscure how someone could experience necessary non-co-instantiation who lacked even such primitive conceptual equipment as knowledge of the law of contradiction. Mill himself gives a clue to what he has in mind when he talks of a positive phenomenon and its negative. The idea seems to be that two phenomena, darkness and light for example, are contradictory when one can be explained as the negation of the other. This works better for some of Mill's pairs than for others; it is hardly obvious that preceding and following, or succession and simultaneousness are related in this manner. But even if we are prepared to waive this point, Mill's notion remains problematic. To comprehend a pair of phenomena as contradictory, the explanation runs, one must be in possession of the concept of negation. But it is extremely hard to see how someone could properly be ascribed an understanding of negation who did not know the truth table for negation - yet to know that truth table is, in effect, to know the law of contradiction, which holds that a proposition and its contradictory are not both true. It is impossible for Mill to avoid this objection: he could not with any plausibility hold that the law of contradiction could be inferred inductively from any experiences of mutual exclus-

ions of pairs of phenomena unless they are further grasped as being contradictory (standing, that is, as positive and negative to each other); but this presupposes the notion of negation to be understood, and understanding this is integrally bound up with knowing the law of contradiction.

But our chief present concern is not with the correctness of Mill's theory so much as with the question of whether it is psychologistic. The opening of the explanation gives a prima facie suggestion of psychologism: the 'original foundation' of the law of contradiction, Mill writes, is that 'Belief and Disbelief are two different mental states, excluding one another.' This might be read as asserting that what the law of contradiction expresses is a pattern of mental states, and if that is what Mill means then he is undeniably taking a psychologistic view. Likewise, if the import of the second part of his story is that the law of contradiction generalises a disposition of the mind not to experience together both members of certain pairs of phenomena, it is hard to resist the ascription to him of psychologism. But neither of these readings has any plausibility unless Mill's concern in the passage quoted is with the analysis of what the law of contradiction means - and it is very clear that it is not. What the law means, he had said, is 'that the same proposition cannot at the same time be false and true' (SL, p.277); but that point got over at the outset, Mill turns to the epistemological question of its 'original foundation,' and presents, in opposition to the school of a priori knowledge, an empiricist account of our knowledge of it. His discussion of the kinds of experience which give rise to a conviction of the truth of the law is wholly directed towards answering this epistemological question. Whatever the merits and demerits of Mill's account, its intentions are very plain. It is significant, in his opinion, that we find ourselves never simultaneously believing and disbelieving the same proposition; it is relevant evidence too that we discover that the world never manifests contradictory phenomena, in the sense that it is never at one and the same time and place light and dark, or silent and noisy. From these experiences we then infer the generalised law of contradiction - but this does not mean that the law is a psychological one about states of mind. (It clearly does not follow from the fact that a proposition has an empirical basis that it asserts something about psychology.)

It is very likely that Mill's lack of insistence in the Examination on an empirical basis for the three laws of thought arose from a realisation of the weakness of the account of that basis in the Logic.

Without ruling out his earlier explanation, he felt obliged to offer the reader an alternative, so he could take his choice: it might be that the laws in question are 'laws of our thoughts by the native structure of our minds' (EH, p.381). Now this may seem even more readily than the inductivist account to invite a psychologistic interpretation, yet once again first appearances are misleading. To say that human beings by virtue of their native mental structure are disposed to believe the law of contradiction does not entail that the logical law is about mental structure, even if there should be a psychological law (a 'law of thought') to the effect that people do not believe contradictions. (Compare this with: Human beings might have been disposed by the native structure of their minds to believe the Second Law of Thermodynamics; but this would not make the Second Law a law about believing, even though we could speak of a psychological law that people believe the Second Law.) There are, admittedly, unclarity in Mill's exposition, and maybe a certain equivocation over the notion of a 'law of thought,' but there is no evidence that he believed that laws of logic were merely principles descriptive of mental operations. Indeed, he affirmed that the 'Fundamental Laws' of thought were:

laws of all Phaenomena, and since Existence has to us no meaning but one which has relation to Phaenomena, we are quite safe in looking upon them as laws of Existence (EH, p.382).

To say that basic laws of logic are 'laws of Existence' is at a considerable remove from saying that they are psychological principles. Even on the idealist construal of phenomena which Mill was sometimes inclined to press, phenomena are never simply identified with principles of mental operation; whatever the nature of the reality confronted in experience, the phenomena of which it consists, Mill held, were to be distinguished from the experiencing mind. So even if we are psychologically obliged to believe basic logical laws, as he thought possible, this does not reduce those laws to laws of psychological operation, as distinct from laws of all existing phenomena.

Mill added that belief in a contradiction is, 'in the present constitution of nature, impossible as a mental fact' (EH, p.381). There is some obscurity whether by 'the present constitution of nature' he meant the state of the world at large, or just the existing state of human psychology, or even both of these together, the former, perhaps, bearing on the inductivist theory of the derivation of the basic logical laws, and the latter on the nativist alternative. But the

general sense of the statement is that only if the factors relevant to determining our beliefs in those laws changed would the beliefs be different. There is no evidence of psychologism here, yet this passage has sometimes been cited as exhibiting Mill's psychologism, most notably by Husserl, who wrote:

We conclude from this passage that the inconsistency expressed in the law of contradiction ... is seen by Mill as an incompatibility of such propositions in our belief. In other words, he substitutes for the impossibility that the propositions both be true, the real incompatibility of the corresponding acts of judgement (Husserl (1970), vol.1, p.113).

I am in agreement with Dennis Christopher (Christopher, p.15) that Husserl's conclusion is a complete non sequitur. From the proposition that the 'present constitution of nature' would have to alter for us to start believing contradictions, it simply does not follow that a contradiction is nothing other than a psychological incapacity to combine certain propositions among our beliefs.

Perhaps there would have been less inclination on the part of readers to ascribe psychologism to Mill had it not been for the notorious passage, quoted earlier, in which he spoke of the science of logic as being 'a part, or branch, of Psychology' (EH, p.359). If psychology concerns the mind and its operations, and logic is a part of psychology, then logic - it follows - is about the mind and its operations too. Many students of Mill's thought must have felt that there was no getting round this passage, and that it establishes beyond all possibility of question that his philosophy of logic is psychologistic in tenor. And if this is so, then all attempts to argue for a non-psychologistic interpretation of other passages in his writings are really quite futile.

Yet once more the prima facie appearances are deceptive. The truth is that Mill was using the term 'Psychology' in an unusually broad sense, so that it covered not merely the descriptive theory of thought and other mental processes, but also the prescriptive theory of rules for correct thinking. That is to say, 'Psychology' for Mill embraced logic just because he understood it as the combination of what we call psychology and logic. This conception of a combined science of psychology and logic may be non-standard, but it does not imply psychologism, for it does not involve any reductive thesis that logical laws are descriptive of mental patterns. In the same paragraph as he declared that logic was a part of psychology, Mill described its part-

icular concerns in a manner giving no whiff of psychologism:

Logic is not the theory of Thought as Thought, but of valid Thought; not of thinking, but of correct thinking.... Logic has no need to know more of the Science of Thinking, than the difference between good thinking and bad.... The properties of Thought which concern Logic, are some of its contingent properties; those, namely, on the presence of which depends good thinking, as distinguished from bad (ibid.).

And again:

it is only the validity of thought which Logic takes cognisance of. It is not with Thought as Thought, but only as Valid thought, that Logic is concerned (ibid.; Mill is reporting Hamilton's ideas here, but reporting them approvingly).

Such passages are identical in spirit to several found in the Introduction to the Logic. 'Logic,' Mill said there, '... is the science of the operations of the understanding which are subservient to the estimation of evidence' (SL, p.12). Those operations which would be of special interest to the logician were the ones bearing on the collection and estimation of evidence, in particular naming, defining and classifying. But the logician need 'not attempt to decompose the mental operations into their ultimate elements';

Logic has no interest in carrying the analysis beyond the point at which it becomes apparent whether the operations have in any individual case been rightly or wrongly performed (SL, pp.12, 13).

In a similar way, the science of music informs us how to discriminate between musical notes, and to judge of their acceptable combinations, but it need not enter into the physics of sound which, though interesting, is of no practical importance to the musician (SL, p.13). In short:

The extension of Logic as a Science is determined by its necessities as an Art: whatever it does not need for its practical ends, it leaves to the larger science which may be said to correspond, not to any particular art, but to art in general; the science which deals with the constitution of the human faculties [i.e. psychology] (SL, pp.13-14; cf. p.87).

If it remains odd, to modern ears, to hear logic spoken of as a branch of a grand science of psychology, it must nevertheless be understood that Mill, in speaking of it that way, intended no reduction of logical laws to principles of psychology in the narrower, present-day sense of that term. It seemed to him to be appropriate to classify logic as a branch of psychology because he saw the chief significance of logic as consisting in its providing a guide to correct reasoning; and reasoning, as a mental process, came within the scope of psychology. A fair objection to Mill's classification of logic, however, is that it lays a snare for the unwary: if logic is conceived as a part of psychology, it becomes quite easy to slip into psychologism, and to slur over the distinction between the logical properties of thought and its characteristics as a mental process. But Mill himself remained free from such confusions at all times. It can come as something of a shock to find that his substantive view of logic is really quite similar to Frege's, though the latter is often, and rightly, represented as the arch-foe of psychologism. In Frege's view, 'the laws of logic ought to be guiding principles for thought in the attainment of truth,' and he permitted talk of 'laws of thought' so long as it was understood clearly that logic's concern was with providing rules for valid thought rather than any description of psychological processes (Frege (1953), p.12). But this is no different from Mill's talk of logic as 'not the theory of Thought as Thought, but of valid Thought,' and as 'a collection of precepts or rules for thinking, grounded on a scientific investigation of the requisites of valid thought' (EH, pp.359-60).

Mill, like Frege, believed in the objectivity of truth, and took truth to be the target of rational thought. The laws of logic should be the guiding principles of rational thought, because they are not descriptions of psychological regularities but rather laws of truth. That Mill's view of the status of logical laws was thus a perfectly standard one is a fact of the greatest importance about his philosophy of logic; but it takes on some additional significance in the light of a recent attempt to reconstrue and defend a version of psychologism. According to Brian Ellis, a plausible form of psychologism takes logical laws to describe not actual thought processes, but ideal ones, where an ideal system of belief is defined as one which is in a state of what he terms 'rational equilibrium.' Now on the face of it, this is a more promising doctrine than what Ellis terms the 'crude' psychologism which identifies logical laws with actual psychological processes, and one may wonder whether Mill, if he cannot be ascribed the



cruder version of psychologism, can be ascribed an Ellis-type view instead.<sup>8</sup> Ellis concedes that no actual belief systems may fully realise the ideal of rational equilibrium, but he explains it as being:

like the concept of a system of bodies in thermal equilibrium, or of a perfectly balanced ecological system. Such states may never be realized in any actual systems, but these concepts are useful all the same in explaining the properties or structural features of actual systems. An ideally rational belief system is one which is in equilibrium under the most acute pressures of internal criticism and discussion (Ellis, p.4).

As Mill, like Ellis, recognises that laws of logic represent ideal patterns of thought, and recognises too that people do not always reason logically (which is why it is useful for them to learn logic), it might seem tempting to construe Mill as holding, just as Ellis does, that logical laws are descriptive of ideal belief systems in rational equilibrium.

What makes this interpretation of Mill quite impossible, however, is that the feature of Ellis's theory which gives it its psychologistic flavour is its construal of 'rational equilibrium' in a manner making no reference to truth - something which Mill would have found completely unacceptable. Ellis proposes to define a valid argument as one such that 'there is no rational belief system in which its premises are accepted and its conclusion rejected,' and adds that, 'for me, validity is an epistemic notion. It is a concept definable within rational belief systems' (Ellis, p.29). On Ellis's account, the foundations for logical systems

by-pass theories of truth. They do so in the sense that they leave open the question of whether any sentence of a given language can be said to be true or false in an objective sense (Ellis, p.102).

This is very different from any theory of Mill's. His philosophy of logic upholds a notion of objective truth and includes a realist theory of error; a belief system would be ideally rational, or in 'rational equilibrium,' for Mill if and only if it were based wholly on logical principles which maximised the probability of the (objective) truth of its components. Ellis's theory is not only very different, but also very implausible. Its obvious weakness is that it places no restrictions on acceptable modes for assessing beliefs other than that they

should preserve a system's 'rational equilibrium.' But it is clear that a belief system could be in 'rational equilibrium' in Ellis's sense, having gained and expelled members through processes of rule-governed criticism and discussion, and still be wholly crazy. There would be nothing to rule out, for instance, use of Arthur Prior's 'tonk' rule - which permits the derivation of any proposition - for adding new beliefs to the system; for there is no external criterion for determining what rules are admissible in the processes of 'internal criticism and discussion.' But it is surely not begging any open questions against Ellis to insist that a belief system which utilised 'tonk' as a principle could not be regarded as rational in any intelligible sense of the word; yet as the use of this rule need not destroy 'rational equilibrium' as he understands it, there is no ground on which he could rule it out as being an unacceptable candidate for a rational principle.

Mill, by contrast, never said anything to suggest that he held validity to be definable without reference to truth. He very clearly did not mean to espouse anything like an Ellis-style psychologism with its rejection of any external and objective standards by which the rationality of a belief system can be measured. The only reasonable final conclusion to draw is that Mill must be exonerated absolutely from all charges of psychologism; there is no particle of sound evidence to support the ascription to him of any form of that doctrine, but a great deal to suggest that his real view excluded it wholly. Whether, to preserve the unity and consistency of his philosophical system, he might have done well to conjoin a psychologistic account of logical laws with a metaphysic of idealism is, of course, another, and a very complex, issue. But the fact of the matter is that in all his discussions of the philosophy of logic, his view of the nature of logical laws was of a strictly orthodox kind.

## SIX

### GLOBAL EMPIRICISM

#### I

Bertrand Russell once defined empiricism as the doctrine that 'all our knowledge is derived from experience' (Russell (1911), p.41). Yet not all thinkers who can reasonably be placed in the empiricist camp have held a view as bold as this. David Hume, for instance - though Russell cites him as a typical empiricist - asserted that propositions expressing 'relations of ideas' are not known through experience, but are rather 'intuitively or demonstratively certain.' 'That the square of the hypotenuse is equal to the square of the two sides,' wrote Hume in the First Enquiry, 'is a proposition which expresses a relation between these figures.' Such propositions of the mathematical sciences 'are discoverable by the mere operation of thought, without dependence on what is anywhere existent in the universe' (Hume (1902), p.25). What Russell was describing was a position which can more accurately be termed 'global empiricism,' which denies that any knowledge has a non-empirical, a priori basis.<sup>1</sup> Empiricism of this most radical kind denies that even logical and mathematical knowledge is a priori in nature; as Crispin Wright has put it, the 'central motif' of global empiricism

combines a general scepticism concerning a priori knowledge and necessity with a desire to allow that logic and mathematics deal in truths of some sort which we are capable of knowing in an ordinary sense - this last phrase meaning by experience (Wright, p.321).

Mill displayed in the Logic an allegiance not to the kind of mitigated empiricism embraced by Hume, but to empiricism of the global variety. All knowledge, according to the Logic, is the product of experience, and no exception should be made for that of logical and mathematical propositions. It is true that in his later years Mill did become more hesitant about the Logic's account of logical knowledge,

and at the very end of his life felt obliged to surrender the inductivist account of our knowledge of the laws of contradiction and excluded middle which he had earlier defended (GA, pp.499-500).<sup>2</sup> Yet he never conceded that even these most basic of logical axioms have an a priori justification, and throughout his career his intention remained constant to press empiricist explanations as far as they would go. On his doctrine that the propositions of the mathematical sciences are to be justified empirically he never withdrew in the slightest degree.

The chief concern of the present chapter is the prospects for success of a global empiricist epistemology of the sort Mill defended in the Logic. In particular, the cogency of the theory that experience is sufficient to bring us to knowledge of logical truths will be considered, though some incidental remarks will be made about Mill's account of mathematical knowledge. This concentration on his epistemology of logic is warranted not just by the fact that his philosophy of logic is a special concern of this study, but also by the peculiarly fundamental and determinative role played by our logical conceptions in our theorising about the world. It would be the ultimate triumph for global empiricism if the laws of logic, which occupy, as it were, the ground floor of the edifice of knowledge, could be shown to be knowable through experience alone; and success here would make it much harder to resist empiricist accounts of other categories of knowledge, including mathematical. As Mill himself said, accounting for logical knowledge empirically 'is indeed hunting the doctrine of a priori knowledge from its last refuge,' and would 'leave nothing standing which countenances the notion that there is a kind of knowledge independent of experience (GA, p.499).

Mill went to great trouble to make global empiricism seem plausible. No fewer than three chapters at the end of Bk.II of the Logic were devoted to expounding and defending it, and while what he had specifically to say about 'logical axioms' is relatively brief and comes only at the end of the Book, he explained that the general considerations about knowledge of axioms which had been raised in the preceding discussion of mathematical axioms apply to the logical ones also (SL, Bk.II.ch.vii.sect.5). However, it is unfortunate that he did not take more trouble over his account of the manner in which experience provides us with knowledge of the 'laws of thought.' We have seen already how slight and unconvincing that account is, and it is clear that the global empiricist needs to do much better than that if he is to persuade us to believe in an empirical basis for logic. Yet the

failure of Mill's account does not entail that no empiricist theory could succeed, though a successful theory would have to surmount the most crucial difficulty to which his account succumbed, and establish that a person in a state of logical innocence could indeed interpret his experience in a manner capable of leading him to knowledge of basic logical laws. To say, for instance (which is not quite Mill's theory), that the law of contradiction is simply inferred inductively from experienced instances of a proposition and its negation not both being true involves implicit ascription to the reasoner of the concept of negation; and it is highly implausible to suppose that someone could have the concept of negation who had no knowledge of the law of contradiction. A viable empiricist theory of logic thus has a major - and possibly an insurmountable - problem to overcome.

It is of some importance to realise that Mill conceived empiricism to provide a complete answer not just to questions of a causal-explanatory kind about the origins of our beliefs, but also to questions about their justification (though he did not always take care to keep these sharply apart). In modern parlance, his view was that empiricism is a theory operating in the context of justification as well as in the context of discovery. The empiricist is interested to enquire 'what is the ground of our belief in axioms[?]' but also 'what is the evidence on which they rest?' and he aims to show not merely that 'the truths which we call axioms are originally suggested by observation,' but also that it is experience, and not some faculty of a priori reflection, which proves them (SL, p.231). The proposition that two straight lines cannot enclose a space is, as an induction from experience, not just 'suggested' but, in addition, justified by that experience:

it receives confirmation in almost every instant of our lives; since we cannot look at any two straight lines which intersect one another, without seeing that from that point they continue to diverge more and more (SL, pp.231-32).

We can say about this axiom, as we can about others too, that:

Experimental proof crowds in upon us in such endless profusion, and without one instance in which there can be even a suspicion of an exception to the rule, that we should soon have stronger reason for believing the axiom, even as an experimental truth, than we have for almost any of the general truths which we confessedly learn from the evidence of our senses (SL, p.232).

But this being so, Mill drew his desired conclusion:

Where then is the necessity for assuming that our recognition of these truths has a different origin from the rest of our knowledge, when its existence is perfectly accounted for by supposing its origin to be the same? (*ibid.*)

Mill was taking his stand on the undeniable fact that experience never conflicts with the 'axioms' of mathematics and logic, but always accords with their truth. But as that is so, it appears superfluous to seek some non-empirical warrant for them; if experience offers a sufficient justification of them, why look for something else to do the job? As Mill observed, with much justice:

The burden of proof lies on the advocates of the contrary opinion: it is for them to point out some fact, inconsistent with the supposition that this part of our knowledge of nature is derived from the same sources as every other part (*ibid.*).

Now the 'advocates of the contrary opinion' do have, as Mill frankly acknowledged, some counterarguments to bring against global empiricism. Three of them seemed to him to be of particular importance, and worthy of careful rebuttal:

A. Experience is not necessary to warrantably grasping the truth of axioms; pure thought is quite sufficient - and is, moreover, the normal route to knowledge of them (*SL*, Bk.II.ch.v.sect.5).

B. Experience of a suitable sort is not always available to establish the truth of axioms; for instance, the axiom that two straight lines cannot enclose a space cannot be empirically verifiable, because we cannot have experience of lines of infinite length (which we would need to have if we were to be able to determine empirically that even infinitely prolonged straight lines do not enclose a space) (*ibid.*).

C. 'Axioms (it is asserted) are conceived by us not only to be true, but as universally and necessarily true. Now, experience cannot possibly give to any proposition this character. ... Experience cannot offer the smallest ground for the necessity of a proposition. She can observe and record what has happened; but she cannot find, in any case, or in any accumulation of cases, any reason for what must happen' (*SL*, pp.236-37).

Mill's mode of answering the first two of these objections throws some new, and intriguing, light on what he understood by the notion of experience. Argument A aims to sap support for the empiricist account of axioms by alleging that mere reflection without experience (by which is here meant sense experience) is an adequate, and moreover

our usual, ground for belief in them; this objection is not intended to demonstrate that an empirical basis for axioms is impossible in principle, but only that it is neither necessary nor usual in practice. It is a counter-claim to Mill's contention that a priori reflection is not required for knowledge of axioms, but by itself it is inadequate to refute global empiricism. A global empiricist could criticise it for a lack of simplicity in its postulation of a priori sources of knowledge alongside empirical ones (which, of course, no a priorist denies to be responsible for many of the things we know). But the case against empiricism is greatly strengthened by production of objection B, which asserts that there are some axioms which could not even in principle be verified by (sense) experience, and which must therefore be known, if they are known, in some a priori way.

Mill made a joint response to objections A and B, the nub of which was that both construe the concept of experience in too narrow a way. As well as sense experience of outer objects there is, in his opinion, inner experience of one's own ideas and other mental states, and both kinds of experience are available for the empirical basis of knowledge. Having observed features of reality by means of our senses, we can then learn more about that reality by means of a kind of mental experimentation on the ideas thereby derived. Mill explained what he meant by use of the example of geometrical knowledge: one of the 'characteristic properties of geometrical forms' is

their capacity of being painted in the imagination with a distinctness equal to reality: in other words, the exact resemblance of our ideas of form to the sensations which suggest them. This, in the first place, enables us to make (at least with a little practice) mental pictures of all possible combinations of lines and angles, which resemble the realities quite as well as any which we could make on paper; and in the next place, make those pictures just as fit subjects of geometrical experimentation as the realities themselves (SL, p.234).

But Mill stressed that to uphold such a view was not to renege on empiricism; for it remains true that

[t]he foundations of geometry would therefore be laid in direct experience, even if the experiments (which in this case consist merely in attentive contemplation) were practised solely upon what we call our ideas, that is, upon the diagrams in our

minds, and not outward objects (ibid.).

Mental experimentation, however, is not confined to geometrical ideas. Even 'recollections of colours or of odours' can be subjected to such experiment; for instance:

A person in whom, either from natural gifts or from cultivation, the impressions of colour were peculiarly vivid and distinct, if asked which of two blue flowers was of the darker tinge, though he might never have compared the two, or even looked at them together, might be able to give a confident answer on the faith of his distinct recollection of the colours; that is, he might examine his mental pictures, and find there a property of the outward objects (SL, p.235).

Mill did not explicitly apply his theory of mental experimentation to the case of logical axioms, but there is quite possibly a reminiscence of it in the suggestion that it is a basis of our knowledge of the law of contradiction that we find that pairs of incompatible 'phenomena' exclude each other from the mental stage. And in writing that we do not find ourselves believing, and disbelieving the same proposition ('Belief and Disbelief are two different mental states, excluding one another' (SL, p.277)), he may have been inclined to regard it as by a similar form of experimentation on mental contents that we discover that propositions are not acceptable with their negations.

Mill's notion of mental experimentation is of considerable originality. Locke, to be sure, spoke of reflection as a form of experience productive of fresh ideas about 'the operations of our own minds,' and asserted that though reflection 'be not sense, as having nothing to do with external objects, yet it is very like it, and might properly enough be called internal sense' (Locke, vol.1, p.78). Yet Locke saw reflection as giving rise to knowledge only about our minds and their contents, whereas Mill regarded mental experimentation as able to lead us to new knowledge about outer reality. A closer parallel to Mill's theory is to be found in Berkeley's view that certain fundamental truths about reality can be elicited by a careful consideration of what we can and cannot conceive. If, for instance, someone wants to know whether a body could exist without sensible qualities, Berkeley recommends him 'to reflect and try, whether he can by any abstraction of thought, conceive the extension and motion of a body, without all other sensible qualities' - Berkeley declaring that he himself cannot conceive of a body existing 'without some colour or other sen-



sible quality' (Berkeley, p.118). Mill, however, did not restrict mental experimentation to attempts to determine what is and what is not conceivable.

Having extended the notion of experience in this manner, Mill felt able to rebut objections A and B to global empiricism by the ingenious strategy of conceding their claims about the importance of thought and reflection in the arrival at knowledge of axioms, but construing the kind of thought and reflection involved as basically empirical in character. His response to the criticism that experience alone could not provide us with knowledge of the proposition that two straight lines cannot enclose a space is particularly interesting. He counters that while we admittedly are incapable of 'ocularly following' lines to infinity, we can perform the requisite tests in imagination, by transporting ourselves in imagination to distant - even infinitely distant - points to which given lines might be extended (SL, pp.234-35). But we might feel less than contented with this response, while granting it to make an intriguing suggestion. A serious flaw to it is that it is thoroughly obscure what criterion could justify the claim that an imagined segment of a line accurately represents the character a real line would have if projected to, say, ten million miles from the point at which we actually observe it; it seems wholly question-begging to assert that our imaginations will provide trustworthy information about the line at far distant points. More significantly still, it may be suspected that Mill missed this point only because he was inclined, in spite of himself, to ascribe to such mental experiments certain features of a priori processes. And that brings to the surface a very fundamental objection to the whole theory of mental experimentation as a form of experience: is Mill deceiving himself and his readers by classifying mental experimentation as an experiential rather than an a priori epistemic mode? By conceding the importance, and indeed the necessity, of mental experiments in the acquisition of knowledge of axioms, is Mill, despite his protestations to the contrary, really surrendering the citadel of empiricism to the a priorist enemy?

For Mill's account of the mind's reflection on its contents sounds dangerously similar to the a priorist's notion of a route to knowledge through the analysis of concepts. Both Mill and many a priorists agree in acknowledging an ultimate origin for our concepts in outer experience, so Mill's insistence that mental experiments are carried out on ideas first presented in sense experience will not in itself establish any radical distinction between his and the a priorist's position. And since, once it has its concepts or ideas, the mind, on both

accounts, can arrive at new knowledge without any subsequent sensory input being required, it becomes unclear how Mill can justifiably claim that his mental experimentation is truly an empirical process. His extension of the term 'experience' to cover such experimentation can easily seem a mere intellectual sleight of hand, and it is certainly highly non-standard. Frege, for instance, specifically contrasted 'sense perception' with a priori sources of knowledge which are 'wholly within us,' the 'logical source of knowledge' and 'geometrical and temporal sources of knowledge' (Frege (1979), pp.267-74). Russell used 'experience' to mean sense experience, and described the thesis that some knowledge is a priori as maintaining that 'the experience which makes us think of it does not suffice to prove it, but merely so directs our attention that we see its truth without requiring any proof from experience' (Russell (1911), p.41). In allowing that sense experience is insufficient for the acquisition of knowledge of axioms, Mill might with some plausibility be taken to be in essential agreement with the a priorist who argues that an empiricist account of axioms is untenable, and that reference must be made to certain faculties of the mind for the analysis of ideas - despite Mill's claim that the analysis in question is, or involves, a kind of 'experience.' Is Mill's global empiricism, then, merely soi-disant?

In fact it is not, though it is easy to mistake it as such. Mill's notion of mental experimentation, properly understood, marks a consistent development of an empiricism which makes no real concessions to a priorism, however it may appear at first sight. His own statement of the a priorist position is of interest in this connection. Dr Whewell and others of his opinion, Mill wrote, assert that it is not experience which proves an axiom, but that

its truth is perceived a priori, by the constitution of the mind itself, from the first moment when the meaning of the proposition is apprehended; and without any necessity for verifying it by repeated trials, as is requisite in the case of truths really ascertained by observation (SL, p.231).

Now there is a genuine distinction between such a priori apprehension of truth and what Mill described as experimentation on mental contents. His account of the latter process, and the examples he gives of it, make very clear that it is mental images ('mental pictures,' as he calls them) which are the material on which experiments are performed; these images, preserved in memory, are of objects previously presented in sense experience, and provided they can be held in the attention in a suff-

iciently steady and vivid manner, their careful scrutiny can give rise to new knowledge about those objects (and with the assistance of inductive inference, about other objects of the same kind). Such processes of examination of images, both singly and in complexes, are, as Mill maintained, not appropriately termed a priori, but are indeed much more closely related to empirical processes as standardly understood - though whether they represent a powerful extension of the latter, as he thought, or rather a mere pale and degraded reflection of them, is likely to divide opinion.

By contrast, a priori thought, if there be any such, would operate, in Mill's opinion, not on mental images but on the meanings of propositions. The truth of axioms, on the a priorist picture, would be elicited by a purely intellectual and non-imagistic process of interpretation of the propositions which express them. This is the view which Mill ascribed to Whewell and his followers, and he made it clear that he regarded it as involving neither the perceptual investigation of real objects nor the quasi-perceptual scrutiny of images of them. Mill would have expected an a priorist to say that we know that two straight lines, even infinitely extended ones, cannot enclose a space, because we discover from examining the meaning of the proposition that two straight lines cannot enclose a space that this is not a real possibility (moreover, we can learn this in one single act of understanding, which we do not need to repeat in order to confirm the truth of the proposition). But this is obviously very different from Mill's own view that we come to know the axiom by mentally experimenting (maybe several times) on images of lines in a way closely analogous to scrutinising diagrams drawn on paper. <sup>3</sup>

It is reasonable, then, to look on Mill's theory of mental experimentation as genuinely distinct from theories of a priori reflection, and to accept his claim that conducting mental experiments on images is a form of empirical investigation. The same may be said, incidentally, of Berkeley's thought experiments aimed at discovering truths about reality by trying what we can and cannot conceive to be possible states of affairs, provided that these experiments can be understood as conducted by the imagination. When Berkeley describes the experiment of attempting to conceive of 'the extension and motion of a body, without all other sensible qualities,' it is certainly tempting to read him as relating an experiment on mental images; and if that is the correct interpretation, then it is wrong to consider him as making here a switch from an empiricist to a rationalist view, as it has sometimes been alleged he is doing (e.g. by Pitcher, p.220). For however

a priori thought processes can be characterised - whether in Mill's manner, as essentially concerned with the analysis of meanings, or in some other way - it seems desirable to regard them as being more than merely experiments on images, which are no more than mental copies of the presentations of sense.

Although Mill's account of mental experimentation on images is not an account of an a priori thought process, it may be questioned whether it is able to go as far as he wanted it to do towards sustaining the claim that a wholly empiricist theory of knowledge of axioms is attainable. For one thing, it makes a very heavy demand on the psychological capacity to produce mental images which are vivid and stable enough to serve as reasonable proxies for actual sense presentations. Most people are not gifted with the capacity to produce to order and to exert an adequate control over sequences of mental images suitable for the role Mill required of them; and indeed, there are people who claim never to have mental images at all. If Mill exaggerated the ability of people to produce, hold in attention and then 'experiment' on their mental images, he may well have been led to do so by his belief, inherited from the empiricist tradition, that ideas are images. Rather oddly, he never seems to have taken seriously the possibility that this belief might be false, and in the Examination he took Sir William Hamilton severely to task for failing to admit that in all conceptual thought there is present to mind 'a concrete idea or image' (EH, ch.XVII; p.321). But if ideas are, one and all, images, and if anyone who can think can be ascribed ideas, it follows that anyone who can think can be ascribed mental images; and if thinking involves the controlling of sequences of ideas, then, on Mill's presuppositions, it involves the controlling of mental imagery. <sup>4</sup>

A further consequence of Mill's conviction that all ideas are images is that he failed to recognise how unlikely it is that mental experimentation on images could be productive of knowledge of axioms whose content does not lend itself readily to any sort of imagistic representation. It is obscure, for instance, what mental experimentation on images we could undertake to convince ourselves of the truth of Peano's postulates, still less of the axioms of non-Euclidean geometries. But that we can sometimes be ascribed ideas where we cannot be ascribed corresponding images is a fact Mill never grasped; and he therefore did not realise that there are limits on the capacity of mental experimentation to reveal truth. His account is most promising in connection with those simple geometrical propositions of whose truth we might find we can most readily become convinced by the scrutiny of diagrams

- for whether those diagrams are drawn on paper or, as Mill put it, they are 'painted in the imagination' instead, should make no deep difference of principle to the character of the process. But it cannot be concluded from its prospects here that the account will work well with regard to axioms in general; and in fact it is hard to see how it could be applied with any plausibility even to the basic axioms of elementary arithmetic.

## II

Objection C to the empiricist account of axioms was, it will be recalled, that experience cannot show axioms to be necessary - that it can provide us with knowledge only of what is, not of what must be. Mill quoted Whewell's dictum that, 'To learn a proposition by experience, and to see it to be necessarily true, are two altogether different processes of thought' (SL, p.237). It is clear that Mill's extension of the notion of experience to cover mental experimentation on images will not be of assistance in the rebuttal of this objection, whatever its potential for resisting objections A and B. For he conceived experiments on images as closely analogous to experiments on objects known directly through the senses, and what is alleged against the capacity of the latter experiments to inform us about necessity can, mutatis mutandis, be alleged against the former.

Mill's response to the objection relies on one of the most radical and distinctive doctrines of his entire philosophy: it does not matter, he argued, that empiricism cannot account for knowledge of necessity - for there is no such thing as necessity! The feeling that some propositions are not just true but necessarily true, he explained, is a pure illusion stemming from the psychological difficulty of imagining to be otherwise something which has been found to be so by 'long established and familiar experience' (SL, p.238). At the root of Mill's account is the alleged compulsive force of the powers of association of ideas:

When we have often seen and thought of two things together, and have never in any one instance either seen or thought of them separately, there is by the primary law of association an increasing difficulty, which may in the end become insuperable, of conceiving the two things apart. ... If daily habit

presents to any one for a long period two facts in combination, and if he is not led during that period either by accident or by his voluntary mental operations to think of them apart, he will probably in time become incapable of doing so even by the strongest effort; and the supposition that the two facts can be separated in nature, will at last present itself to his mind with all the force of an inconceivable phenomenon (SL, pp.238-39).

Mill claimed that philosophers like Whewell who had defended the existence of necessary truths had no better ground on which to base their opinion than the fact that we do, in practice, find the negation of some propositions to be inconceivable. But inconceivability, Mill urged, is a very bad criterion of impossibility, as experience had shown that what was deemed inconceivable had sometimes come to pass:

our capacity or incapacity of conceiving a thing has very little to do with the possibility of the thing in itself; but is in truth very much an affair of accident, and depends on the past history and habits of our own minds (SL, p.238).

Still less can our finding the negation of certain propositions to be inconceivable establish that we have for those propositions an a priori warrant, or 'evidence of a higher and more cogent description than any which experience can afford' (ibid.). Once upon a time, Cartesians had rejected the Newtonian doctrine of gravitation on the strength of a proposition whose negation appeared inconceivable and against reason - the proposition that a body cannot act where it is not; yet Newton's doctrine had eventually overcome all opposition and achieved universal acceptance (SL, pp.239-40). Inconceivability is thus to be rejected as a quite unacceptably subjective criterion of objective impossibility.

Even if one has doubts about Mill's associationist explanation of why we find the negations of some propositions to be inconceivable, his criticism of the employment of inconceivability as a criterion of impossibility is likely to find few dissentients. It is perhaps a little surprising that he did not consider a different theory of what makes necessary propositions necessary, the theory, namely, that they are necessary because they are guaranteed true by virtue of their meaning. We have seen that Mill understood the a priorist to hold that reflection on the meaning of axioms is sufficient to determine their truth, and it is odd that it did not occur to him that a likely

line for a priorism to adopt is that it is in virtue of their meaning that axioms are true. Had he thought of this theoretical option for a priorism, he might well have considered it worth the trouble of refutation. Having asserted that axioms are true by virtue of their meaning, the a priorist can follow this up by claiming that the meaning relationships of their terms make such propositions not just true but necessarily true. For instance, it might be proposed that 'Two straight lines cannot enclose a space' is necessarily true, not because we are unable to conceive of two straight lines enclosing a space (which may be true, but is irrelevant), but because it is part of the meaning of the expression 'two straight lines' that two straight lines cannot enclose a space.

In the wake of Quine's essay 'Two Dogmas of Empiricism', many philosophers have become very unsure whether there really are any propositions which are true by virtue of the meaning of their terms, or 'analytic.' It is hardly to be supposed that Mill anticipated Quine's worries about analyticity, which rely on the complex and sophisticated argument that analyticity and its close cousins synonymy, definition and necessity are only definable in terms of each other, in a closed circle of definitions from which there is no exit. It is more likely that Mill did not consider the view that axioms are true by virtue of meaning because it never occurred to him that there could be any doubt that axioms, in almost all cases, express significant truths about the world, and are true not because of the semantic relationships of their terms but because reality is as they assert it to be. The exceptions to this generalisation - though in the Logic hardly thought worthy of the name of 'axioms' - were the law of identity ('Whatever is, is') and the Dictum de omni et nullo, which were trivial truths about words and verbal relationships, and not substantive claims about reality (SL, Bk.II.ch.ii.sect.2,3). These propositions, though he did not put it in these terms, he might then have been prepared to regard as true by virtue of meaning, for he held their truth to depend on facts about language rather than facts about the world; and as such they attracted his unmitigated scorn. But the theory that all those axioms standardly deemed necessary are true by virtue of the meanings of their terms he would have dismissed, had he encountered it, as too obviously wrong to be worth discussing.

There is some irony in the fact that, if Mill in 1843 had been ready to say it of any propositions, he might have been prepared to say of the law of identity that it was true by virtue of its meaning, for there is good reason to think that this is quite impossible. It is plausible

to think that the law of identity must be true for any other proposition to be true by virtue of meaning. Take, for instance, the proposition that two straight lines cannot enclose a space. For this to be true by virtue of meaning would presumably require that an identity held between the meaning of the predicate expression and a part of the meaning of the subject expression; that is to say, being unable to enclose a space would have to be part of what is meant by the expression 'two straight lines.' But now, what can be said about the law of identity itself? Although this is normally considered a necessary truth, it cannot be explained as being true by virtue of its meaning, if truth by virtue of meaning presupposes the truth of the law of identity, for such an explanation would be circular. But if the necessary truth of the law of identity cannot be explained as relying on the meanings of its terms, how then is it to be accounted for? The a priorist might suggest that, while it is clearly necessary, it is not necessary in virtue of anything at all; its necessity is in no way a derivative feature but one belonging to it in a way which neither invites nor admits of any further explanation. The empiricist might reply that the a priorist is now just resorting to obscurantism and mystery to make up for his lack of a proper theory; and he will doubtless add that a priorism is now shown to be without any quite generally serviceable account of necessary truth. Why not, he will ask, simply drop talk of the necessity of the law of identity, and treat it as a proposition empirically found to be true (but not necessarily true) about all reality? And if we can treat so fundamental and universally applicable a principle as the law of identity as an empirically discovered truth, what should prevent our treating all other so-called 'necessary' axioms in the same way?

As we shall see, the global empiricist's contention that all propositions can be tested against experience encounters very serious problems of its own; for the testing must rely on principles whose own justification can hardly be of an empirical kind without danger of circularity or vicious infinite regress arising. But there is in any case textual evidence to suggest that Mill himself did not always wish to press the claims of global empiricism of the boldest sort. It has already been mentioned that his accounts in the Logic of the basis of our knowledge of the laws of contradiction and of excluded middle are quite brief (in fact, his treatment of the latter law consists largely of quotation from Spencer (SL, pp.278-79)), and it may reasonably be wondered whether this brevity reflects a lack of confidence in the truth of the empiricist account of these axioms. Moreover, in



the very paragraph in which he presented an empiricist explanation of knowledge of the law of contradiction, Mill also floated the apparently inconsistent suggestion that the law is really 'a mere identical proposition' (SL, p.277). It is significant too that in the rough draft of the Logic which he wrote before the version printed as the 1st Edition, he made no reference whatsoever to an empiricist treatment of the axioms of logic (SL, Appendix A).

The truth of the matter is that Mill seems sometimes to have hesitated over the extension of the empiricist theory to logical axioms, not, however, because he thought that an a priorist account of them might be correct after all, but because he doubted whether any attempt to justify them was really in order. His failure to declare himself strongly in favour of an empirical account of the axioms of logic stemmed not from any suspicion that those axioms were, so to speak, beyond the power of empiricism to accommodate, but rather from a suspicion that they were beneath it. There can be little question that he came to believe this about the law of identity, which at least by the time he wrote the Examination he was willing to look on as 'an indispensable postulate in all thinking' (EH, p.376), yet one of such simplicity and fundamentality that the question of its justification could not sensibly be raised. It was not that he believed that empiricism would give the wrong justification of the law, and some other theory the right one; instead, no question about its justification could appropriately be posed.<sup>5</sup> The laws of contradiction and of excluded middle appear to have given him more pause for thought. His cautious view apparently was that if these laws were in need of justification, then, of course, that justification must be an empiricist one; but perhaps they were in reality identical propositions and, as such, like the law of identity itself, did not admit of justification in the way all non-identical propositions did. It was the claim that no justification was needed which finally came to the fore in the review 'Grote's Aristotle', where Mill argued that as identical propositions they did not need the support of 'a gathered experience' (GA, p.499; cf. a suggestion made many years earlier at SL, p.277). But if Mill took much time to make up his mind about the status of the basic logical axioms, he never displayed the slightest tendency to weaken in his allegiance to the central tenet of an empiricism of global dimensions, that all justification is by reference to experience.

Mill never explained why he thought that the law of identity, or such a proposition as the law of contradiction, if merely expressive of an identity, required no justification, but it may be presumed that he

believed that nothing more primitive in the order of knowledge could be adduced in support of propositions of such fundamentality. Although he did not state it, he probably took the reasonable line that justification has somewhere to come to a stop, and though he wavered about the precise location of the laws of contradiction and excluded middle in the edifice of knowledge, he saw clearly that any attempt to justify the law of identity in terms of something still more primitive was quite vain. But to allow that experience is not the source of justification of the most primitive logical laws does not, of course, entail conceding to a priorism that those laws can be known in advance of experience, and Mill seems to have believed (see, for instance, GA, pp.499-500) that consciousness of the truth of the laws of logic arises only in the course of experience. (That is to say, while the most basic laws of logic are not justified empirically, they yet only become known in experience.) Yet he also believed, as we saw, that these basic laws of logic are laws which we are under some psychological compulsion to accept; that is, while laws of logic are not themselves psychological principles, Mill thought that there are some psychological principles to the effect that we should believe certain of the most fundamental logical laws - though perhaps only the three traditionally-labelled 'laws of thought.' At first sight, this may seem to represent a substantial concession to a priorism, but in fact it is no such thing. Mill did not consider that human psychology is of such a nature that a belief in some fundamental principles of logic can and will arise in the absence of experience; rather, he held that the human mind is so constructed that in interpreting its experience it will follow the patterns expressed by the most fundamental logical laws. Moreover, he did not take the existence of psychological laws to think logically to have any bearing on the justification of logical laws, and in particular he did not suppose that logical laws were justified by the very existence of psychological compulsions to believe them. Even so, one might wonder whether it was not superfluous (and misleading) on Mill's part to postulate psychological laws of logical thought; for if fundamental principles of logic, while not requiring experience for their justified belief (being, strictly, beneath justification of any sort), are yet only learnt in the course of experience, then experience would appear to offer a sufficient explanation of why human beings accept those principles, without needing any supplementation by a theory of psychological tendencies to think in accordance with them.

For all their hesitations and obscurities, Mill's various discussions of our knowledge of the fundamental laws of logic comprise a suggestive and valuable contribution to empiricist philosophy. While the precise nature of his theories in this area is often elusive (and may, indeed, have been far from wholly clear to himself), his ideas are worth careful attention, not least because they have a significant bearing on the important but far from simple question of what really distinguishes empiricist from a priorist theories of knowledge.

It was suggested above that Mill inclined to construe the most fundamental laws of logic as incapable of any justification in terms of other principles - as being principles of so primitive a kind that they are, metaphorically speaking, 'beneath' justification. But an obvious question which arises about such a view is whether Mill has now abandoned global empiricism in making what appears to be a large concession to a priorism. Can a bona fide global empiricist really afford to allow that among the things we know are some propositions for which we do not possess an empirical justification? Maybe the kind of mitigated empiricism found, for instance, in Hume's writings can admit the existence of items of knowledge for which we have no a posteriori warrant; but the more thoroughgoing empiricism which Mill purported to espouse would appear to exclude the possibility of such items.

Now it is a mistake to conceive the distinction between empiricist and a priorist theories of knowledge to be clear-cut. In reality there are not just two, sharply contrasted views which philosophers might hold, but a spectrum of positions running between extremes. If Mill did not hold (or, perhaps more accurately, did not finally hold) the most extreme form of empiricism imaginable, it does not follow that he relinquished the field to a priorism; I shall argue, in fact, that even after his concessions on the score of knowledge of basic laws of logic, his position can still appropriately be described as a global empiricist one.

Mill never relaxed his opposition to a strong version of a priorism whose appeal to many philosophers has continued even to the present day. On this version, necessary truths, including the laws of logic and mathematics, can be rationally known by the power of our intuitive capacities - that is, we can just see, by the force of our understandings, that such and such propositions are true. Many great philosophers have had few qualms about proclaiming the existence of such capacities of rational intuition, and in the present century

the authority of no less a figure than Frege has encouraged much unembarrassed talk of a 'logical source of knowledge' (see Frege (1979)) to account for our knowledge of elementary logic. Not many writers have taken issue with such notions of a priori knowledge, though the same obscurantism which Mill condemned has occasionally spurred a philosopher to remonstrate with the supporters of the orthodox view. Among the limited company who continue the tradition of Mill is Max Black, who has strongly criticised the idea of intuitive justification of the laws of logic. As Black has written, a tradition going back to Aristotle

claims the possibility, indeed the necessity, of providing a warrant for logical and mathematical truths. The position is dominated by a supposed analogy between vision and an alleged process of 'mental insight,' characteristically expressed in a metaphorical terminology of 'evidence,' 'intuition' (Latin: intuere, to look), 'the light of reason,' 'clarity,' 'distinctness,' and so on (Black (1970), p.17).

One recalls here Mill's description of the way in which a priorism opens the door to regarding 'every inveterate belief and every intense feeling' as 'its own all-sufficient voucher and justification' (AU, p.233). Black adds the observation that intuition could provide at most a private justification of a proposition, for someone who claims that the justification that two and two make four is a certain mental fact (the fact, namely, that it seems intuitively right to him to affirm that two and two make four), cannot use that fact to convey an intelligible justification to anyone else. It might be countered that if in practice people agree in their intuitions, the lack of a strictly public justification for the proposition that two and two make four will not matter, as people will coincide in their private justifications for it. But even agreement in intuitions will not help to answer the deeper Millian objection that it is simply not clear why any mental facts whatsoever should be taken as justifying propositions about extra-mental reality. To answer this objection, there would have to be supplied some account of why human intuitions should be trusted as sources of knowledge about ultimate logical and mathematical reality. But nobody knows any way of vindicating the claims of intuition to provide knowledge, which consequently tends to attract description in nothing better than the loose and hopeful metaphors drawn from ordinary visual perception which Black condemns.

Black himself favours regarding a priori propositions as those whose truth is revealed in the very act of understanding them, so that in understanding such a proposition 'we necessarily know it to be true, and if we have any doubt we could not have understood what we thought we were doubting' (Black (1970), p.18). But what understanding a proposition makes plain to us is the meaning of that proposition; and in maintaining that when we understand an a priori proposition we eo ipso grasp its truth, Black is hinting strongly that he takes the truth of a priori propositions to be a function of their meaning. If Black accepts some form of the view that a priori propositions are true in virtue of their meaning, he has of course diverged considerably from Mill's position (for Mill did not believe that those propositions normally classified as a priori were in general true by virtue of semantic relationships rather than by virtue of the way the world is). But, as we have seen, it is unlikely that the notion of a priori propositions can be satisfactorily elucidated along these lines, both because of Quinean worries about analyticity, and because the truth-in-virtue-of-meaning theory cannot cope with the law of identity, surely the most prominent candidate of all for a priori status. Thus in refusing to accept that there were any propositions which were a priori either in the sense of being knowable by a special faculty of intellectual intuition, or in that of being true by virtue of their meaning (unless, indeed, there was a very small number of the latter, as he may have believed in 1843), Mill occupied a highly defensible position.

But if some propositions are beneath justification, being warranted neither by experience, nor by intellectual intuition, nor by performing an act of understanding of their meaning, are they not then in some sense a priori (even if they are only grasped, as Mill held, in the course of experience), just because nothing more primitive is available to be cited in their justification? Perhaps it is an ultimate fact that human beings with normal faculties accept the basic logical laws, and while other things they accept by inference can be justified by reference to their acceptance of logical laws, their acceptance of those laws themselves cannot meaningfully be said to be justified by anything at all. Now it is reasonable to describe such propositions as a priori, and it is also plausible to suppose that Mill accepted their existence. Thus Mill accepted the existence of some a priori propositions, at any rate in his later (post-Logic) years. But it should immediately be said that the sense of 'a priori' in which he accepted that there were some a priori propositions is of the thinnest kind, and his acceptance of the existence of a priori propositions of that

kind is at no detriment to his adherence to the quintessential empiricist claim that all justification is empirical justification. To grant that some propositions are a priori in the 'thin' sense of being beneath justification is quite different from granting that there are any which are a priori in the 'thick' sense of being knowable by an act of intuitive understanding - the view which Mill devoted so much of his philosophical energy to combating. In admitting that there is nothing anterior in the order of knowledge to the basic laws of logic, Mill in no degree withdrew his opposition to the view that there are special faculties of intuition or insight which provide our justification for believing logical laws. Such non-experiential routes to truth were, in his opinion, a myth - a dangerous myth, indeed - and experience was the only source of justified belief of all those propositions (unlike the basic laws of logic) whose justification raises a genuine question.

The boldest form of global empiricism might be characterised by the conjunction of the following two propositions:

(GE 1) No proposition is to be justified a priori (where 'a priori' is understood in the 'thick' sense distinguished above);

(GE 2) All propositions are to be justified by experience (that is, by perception, or by inference from perception).<sup>6</sup>

Now (GE 2) is inconsistent with the maintenance of the existence of a class of propositions which are a priori in the 'thin' sense of being beneath justification. If Mill accepted the existence of that class of propositions, he consequently cannot be ascribed a belief in (GE 2). But someone who accepts that there are some 'thin' a priori propositions is not debarred from holding the following proposition, as an alternative to (GE 2):

(GE 2') All propositions admitting of justification are to be justified by experience.

It is obvious that the combination of (GE 1) and (GE 2) represents a stronger form of empiricism than the combination of (GE 1) and (GE 2'), for (GE 2) entails (GE 2'), but not vice-versa. (Note, though, that the less radical form, i.e. (GE 1) & (GE 2'), does not actually assert that there are any propositions which do not admit of justification, but it leaves open the possibility that there are some.) There seems no good reason for refusing to retain the label 'global empiricism' for the position represented by the conjunction of (GE 1) and (GE 2'). Although it does not assert that all propositions have an empirical justification, it refuses to acknowledge the existence of

any other kind of justification than the empirical, and in particular it has absolutely no truck with the notion that some propositions are a priori in the 'thick' sense. While not the most radical possible form of empiricism, it is yet a doctrine of considerable boldness, and is in fact much bolder than the positions of many who have been regarded or who have regarded themselves as empiricists. (We may recall again here how even David Hume, in whose philosophy experience plays so important a role, conceded that propositions expressing 'relations of ideas' can be known 'by the mere operation of thought.') If Mill in his earlier work inclined towards the boldest form of global empiricism, in the years after the first appearance of the Logic he moved towards the less bold variety, but never beyond it; that is, he never ceased to be an empiricist of the global kind, even when he came to admit that there might be propositions incapable of empirical justification.

It is of some interest to note that Mill never brought himself to describe the basic laws of logic as necessary, even though in his later years he ceased to insist on their empirical status. Necessity continued to seem to him to be merely an illusion engendered by certain psychological pressures to think in particular patterns over which we have scant control. It may be quite inevitable that human beings, by virtue of their psychological make-up, will not in the course of their experience fail to believe in the law of identity and the law of contradiction, though there is nothing available to justify these beliefs, but there is still no need, on Mill's view, to regard those laws as necessary truths; a sense that they are necessary is nothing more than a reflection of the psychological inevitability that we shall believe them. In this abiding dislike of necessity, beloved of a priorism, Mill further demonstrated his commitment to a highly radical form of empiricism.

### III

A natural response to Mill's mitigated global empiricist epistemology is to view it as the result of a partial failure of nerve on his part, and consequently as a less satisfyingly uniform theory than the boldest variety of empiricism (the form, that is, which conjoins with (GE 1) (GE 2) rather than (GE 2')). Even granting the difficulty of identifying some empirical justification of the most basic laws of

logic, might Mill not have done better to insist on the view proposed (though with a measure of diffidence) in the Logic that all propositions are amenable to justification by experience? The problem of describing an adequate empirical basis for accepting the fundamental laws of logic could then, if necessary, be shelved for the present in the hope that philosophical techniques in the future might prove better equipped to solve it; and the result would be a theory which was simpler, more unified and more exciting than that for which Mill eventually settled.

It is a very fair objection to this line of thought that, even if the attractiveness of theories is largely proportionate to their simplicity and unity, to prefer (GE 2) to (GE 2') is hazardous unless some definite grounds can be supplied for thinking that the task of providing an empirical justification for the most basic laws of logic will not in the end prove an insuperable one - and no such grounds have yet been supplied. But even if that very considerable objection is waived, there is further reason for supposing that global empiricism of the boldest kind - the kind, namely, represented by the conjunction of (GE 1) and (GE 2) - is untenable. Although misgivings about global empiricism are not always converted into the hard currency of argument, the philosophical literature does contain one powerful line of objection to global empiricism in its most radical form. Crispin Wright has recently stated the objection in a cogent manner, and it may be that he does not know that a very telling version of it appeared earlier in Husserl's Logical Investigations. Husserl's special target was Mill and Wright's is Quine, but the strategy of the attack is the same in both cases, and I shall accordingly speak of the 'Husserl/Wright objection' (or the 'H/W objection' for short) without much attention to the nuances of difference between the two presentations.

Husserl and Wright claim that unless there is a subclass of propositions possessing normative force and requiring for their acceptance no appeal to experience, there can be no purchase on the notion of confirmation, though empiricism crucially requires this notion in order to make sense of the checking of statements against experience. At first glance it may not seem that the global empiricist need be much worried by this objection, as it is open to him to say that propositions of basic logic, on his theory as well as on rival ones, do have a special role to play as deep structuring principles of theoretical systems, and are accorded, once they have been (empirically) established, a normative significance in regard to the verification



of propositions of other kinds. But the problem goes deeper than this. Global empiricism of the boldest stamp maintains that logical propositions are derived from experience - but now, what is supposed to govern their checking against experience? As Husserl writes:

If ... all proof rests on principles governing its procedure, and if its final justification involves an appeal to such principles, then we should either be involved in a circle or in an infinite regress if the principles of proof themselves required further proof, in a circle if the principles of proof used to justify the principles of proof were the same as the latter, in a regress if both sets of principles were repeatedly different (Husserl (1970), vol.1, p.116).

Husserl concludes from this that:

Plainly ... the demand for a fundamental justification of all mediate knowledge can only have a sense if we can both see and know certain ultimate principles on which all proof in the last instance rests (ibid.).

Similarly Wright:

If a given theory is to be a structure which we know how to modify in the light of experience, we shall require, sooner or later, not hypotheses concerning the findings which a theory does or does not tolerate, but rules ... the underlying logic of a theory cannot be supposed to be itself under assessment when a key experiment is constructed; for it is only within the network of inferential and descriptive rules which the logic supplies that we can give sense to the idea of an apparent conflict of the results of the experiment with the theory (Wright, p.328).

In short, how could we check any logical principles for their accord with experience unless we could presuppose we already had a logic to govern the checking? Circularity or vicious infinite regress could be avoided, it seems, only if we possessed a logic of which the warranty was not empirical.

The H/W objection may be seen as a special application of a thesis about proof which one often encounters in a more generalised form. This is the thesis that for proof to be possible, there has ultimately

to be some principle of proof which is itself just accepted without proof. It is likely that this thesis, or something close to it, was intended by Lewis Carroll as the moral of 'What the Tortoise said to Achilles'. A more direct presentation of it is to be found in Ayer's The Problem of Knowledge, where the view is defended that a process of proof 'cannot go on for ever,' and that while we might defend a logical or mathematical proposition by deducing it from others,

the proof must start somewhere. There must be at least one statement which is accepted without such proof, an axiom of some sort which is known intuitively ...

There will come a point, therefore, when we are reduced to saying of some logical statement simply that it is valid (Ayer(1956), pp.20-22).

As Husserl and Wright portray his position, however, the global empiricist in effect rejects this thesis about proof, because he means to claim that no propositions whatever are free of the requirement to be justified by reference to experience. Even the most basic laws of logic, in his view, can be justifiably believed only in so far as they are found to have an experiential warrant. But the difficulty with this is that if their fit with experience is to be confirmed, the process of confirmation must be governed by a logic, and a question then arises about the justification of the principles on which it relies; and it appears not possible for the empiricist to attempt to provide this justification without becoming embroiled either in circularity or vicious regress. The conclusion to be drawn is that the global empiricist is gravely in error when he rejects the thesis that proof must start from something unproved. <sup>7</sup>

It should be apparent that the objection which Husserl and Wright offer to global empiricism is directed against that form of the view which demands an empirical justification for all propositions - that is, which maintains the truth of (GE 2). In its insistence that all propositions are to be justified by experience, this strongest version of the doctrine does not leave open the possibility that there are any logical propositions which do not; hence, the logical propositions taken to govern the checking of propositions against experience are, on this view, themselves in need of checking empirically - which invites the charge that circularity or vicious infinite regress are now unavoidable. Husserl believed that this objection delivered a mortal blow to the variety of empiricism upheld by Mill. But if it is correct to ascribe to Mill (at any rate, in his later years) a belief in (GE 2') rather than (GE 2), the objection is misdirected.

For the weaker global empiricist position which Mill came to adopt does not close off the possibility that there are some propositions for which it would be inappropriate to seek any empirical warrant; and Mill thought that certain very basic laws of logic were among this number. To be sure, he allowed that a limited set of very basic laws of logic were beneath justification not because he had grasped the force of the H/W strictures on the most radical form of empiricism, but because he had to confess to failure in his search for a suitable empirical justification for them. Nevertheless, the concession he made has the useful property that it enables him in principle to sidestep the H/W objection.

But why only 'in principle'? The reason is that Husserl and Wright show that the empiricist must admit the existence of a sufficient number of non-empirically-justifiable laws of logic to be capable of governing the checking against experience of all other propositions. Now Mill was prepared to grant that the three traditional 'laws of thought' were amenable to no justification by experience, but he nowhere voiced any opinion that the same might be true of any further logical laws. It cannot be concluded from his silence, of course, that he would not have consented to expand the category of laws of deductive logic not open to empirical justification, if shown good reason to do so. But the fact is that he expressed doubts about the empirical status of the three 'laws of thought' alone, thus leaving it open to an opponent to protest that he has not held immune from the requirement of being vindicated by experience a sufficient number of logical laws to govern the processes of empirical confirmation.

Yet it is a difficult question how many laws of deductive logic the empiricist could be forced to accept as having no empirical justification. For there is an obvious and inviting move for him to make at this point which will be disputed by his opponents but which, if it were successful, would preserve him from the need to admit that any substantial number of deductive logical laws were unamenable to justification by experience. This move consists of granting the point of the H/W objection that ultimate logic has to be accepted without any attempt to justify it, but insisting that this ultimate logic comprises (along with maybe a few deductive principles, such as the 'laws of thought') chiefly an inductive principle or principles. Thus Mill, if he had been confronted with the H/W objection, might well have proposed to hold as beneath justification not just the 'laws of thought' but also the inductive logic of inference from particulars to particulars. With this ultimate logic, not itself up for justification, the

business of justifying all those propositions which are not beneath the need for it could proceed - and in the Millian epistemology, this would include a host of beliefs held by many philosophers of a rival persuasion to be a priori in the 'thick' sense.

Mill never actually declared that he held the soundness of inference from particulars to particulars to be a matter admitting of no justification. Yet he never treated inference from particulars to particulars as if it required justificatory argument. Believing that knowledge comes through the sources of observation and inference, and that deductive (syllogistic) inference was incapable of providing epistemic advance, he maintained that knowledge-by-inference was the product of inductive reasoning - and it must have seemed to him to be an obvious and unquestionable truth that inductive inferences just did lead to genuine new knowledge. It is true, as we saw in Chapter Four, that he proposed to regard the principle of the uniformity of nature (identified with the law of causation) as providing the warrant for all inductions; but we also saw that his account of how it did this was a highly eccentric one, the uniformity principle being characterised not as a premise in a justificatory argument, but as a proposition for which the evidence accumulates in the course of inductive reasoning. Now Mill's failure to address issues about the basic soundness of inductive reasoning, and in particular his failure to respond to Hume's sceptical strictures on induction, seemed a legitimate ground for a strong complaint against him: his sanguine acceptance of the truth-attaining capacities of inductive inference appeared an objectionable feature in a philosopher who had proved himself a severe (and in fact over-severe) critic of the ability of deduction to advance knowledge. But in the light of the H/W objection, Mill's cool assumption that knowledge is attainable by inductive methods (albeit his description of inductive inference in terms of arguments from particulars to particulars is an unappealing characterisation of that form of inference) can seem to take on a new colour. For if an ultimate logic just has to be assumed (on pain of circularity or infinite regress), why should Mill not have his way in regarding a variety of inductive inference as the major component of such a logic, itself beneath justification though serving in the assessment of all those beliefs which lack a simple observational warrant? And indeed, would it not be reasonable to propose that the H/W argument relieves us from the need to reply to Hume's objections to induction altogether - could we not just say that, as we must treat some logical principles as beneath justification, we will treat some principles of an inductive logic that way, and relinquish the hopeless

search for a justification of induction?

Unhappily, Hume's criticisms of inductive reasoning cannot be so easily circumvented. It does not follow from the premise that some logical principles must be held to be beneath justification that we can choose whatever principles we like to fill that position. It is far more plausible to suggest that the law of identity or the law of contradiction are beneath justification than to hold that our inductive practices are. As Mill came to realise, it is impossible to cite any principles capable of justifying the laws of identity or contradiction which occupy a more primitive or fundamental position in the order of knowledge. Now it is true, in one sense, that we are equally at a loss for any principles to justify inductive reasoning. But there is an asymmetry between the cases in that we can at least state a condition which has to hold if inductive reasonings are going to be by and large trustworthy: the condition is the uniformity of nature, which is a presupposition of inductive inference. This condition, however, we cannot establish by any of the evidence available to us; we know only that nature has so far been a uniform system, but not that it will continue to be so. But in the absence of good reasons for relying on the uniformity of nature, inductive reasonings are without an adequate rational warranty. As Hume and Mill believed, it probably is true that human beings are psychologically disposed to draw inductive conclusions, relying on an assumption of uniformity; and in this respect inductive reasoning is a primitive feature of human mental life, and one which could probably not be discarded by an individual with even the greatest effort. But the inability of human beings (not shared, perhaps, by God) to produce a satisfactory demonstration of the uniformity principle, whose truth is a conditio sine qua non of the success of inductive inference, means that our inductive practices are properly regarded not as lacking a justification because they are beneath the need for one, but as lacking a justification which they do need but which cannot be supplied.

A fair assessment of Mill's variety of global empiricism would be that it avoids the difficulties urged by Husserl and Wright against global empiricist epistemologies, but at the price of running foul of the problem about the soundness of induction raised by Hume. The problem of induction, of course, is by no means only a problem for empiricists; it besets all epistemologies which attempt to respond to the fact that many of the propositions which human beings take themselves to know they arrive at by an inductive route. But if, to avoid the H/W objection, Mill's empiricism seeks to rely on the soundness of

inductive reasoning as its central dynamic principle, it exposes itself in a peculiarly direct way to the Humean difficulty; and it is quite impossible to mend matters by making the implausible claim that the soundness of induction can be held to be beneath the need for justification.

These problems for Mill might cheer the hearts of a priorists, but it would be very rash to suppose that their theories, by avoiding the pitfalls lying before his, succeed where his fails. The attraction of a priorism is that it holds out the hope of anchoring knowledge in infallible intuitions into the nature of things. Even philosophers normally regarded as being in the empiricist camp have found it hard to resist the appeal of the idea that certain ultimate truths can be known by a priori intuition (that is to say, that certain propositions can be classed as a priori in the 'thick' sense). Thus Ayer, after saying that proof must start somewhere, asserted that the starting point must be 'an axiom of some sort which is known intuitively' (my emphases), a view very close to Husserl's that proof is only possible 'if we can both see and know certain ultimate principles on which all proof in the last instance rests.' Now as Max Black observed, the notion of intuition or insight which is at issue here appears to be modelled on that of ordinary visual perception (an origin which a word like 'insight' quite evidently betrays). Ordinary visual perception, however, is not always veridical, and it is a legitimate question to put to those who uphold the existence of a faculty of a priori intuition how they can be sure that a priori intuition cannot likewise lead us astray. Unfortunately, the nature of the faculty of a priori apprehension, though its existence has been accepted by many writers, has been clarified by none, so the question about its trustworthiness presently lacks an answer. Moreover, it is not clear that the question is in principle answerable without running foul of the H/W objection. Someone attempting to defend the veridicality of a priori intuition must be able to appeal to some further intuitions or principles of a justifying kind, but it is hard to see how in this case he is going to avoid either circularity or vicious infinite regress. A defender of a priori intuition is likely to object here that such intuition is not to be regarded as subject to the need for such justification; rather, it represents itself the kind of ultimate stopping place in the order of justification called for by the argument of Husserl and Wright. The trouble with this rejoinder is that it embodies the same kind of wishful thinking as proved unacceptable from a defender of inductive inference who should propose that the soundness of induction

was to be regarded as beneath the need for justification. So long as the best available characterisation of a priori insight remains based on an analogy with visual perception, which is not always veridical, no adequate ground has been given for trusting the products of such insight as infallible.

If global empiricism of the boldest variety must be judged to succumb to the H/W objection, the same cannot be said of the weaker version which can reasonably be ascribed to the later Mill - though it encounters difficulties in respect of its use of induction as an ultimate logic. But rival a priorist views are hardly free from serious problems either, and there is some irony in the fact that the H/W objection can even be turned against one of its authors - Husserl - when he claims the existence of a faculty of intellectual intuition into the 'ultimate principles' on which all proof relies. It is interesting that Crispin Wright considers that it is conventionalism of the kind associated with the later Wittgenstein which is the chief beneficiary of the embarrassment he believes the global empiricist must suffer in the face of the H/W objection. Such conventionalism maintains that the truths of logic and mathematics are conventions, or truths by fiat, rather than the results of any process of discovery about the world; they are humanly created tools for dealing with the material of experience, and there is no opening for saying that they are false, or untrue to reality, once they have been taken, by a general convention, into use. There are obvious difficulties with conventionalist views of this type, of which the most prominent is that conventionalism seems to have unsatisfyingly little to say about why one set of conventions should be given preference over another (often a metaphysics of indeterminacy is brought in to assist here: the world is said to be not wholly determinate in character in advance of the selection of logical and mathematical principles).<sup>8</sup> In the present state of research, it can hardly be said that any one school of thought about the character of the fundamental principles we employ in our reasonings has achieved the best of the argument. But in the continuing debate on this theme the voice of the global empiricist of Millian stamp has a right to be heard. His theory, to be sure, has great difficulties to surmount; yet it is not obviously more problematic than its rivals.

## SEVEN

### THE RELATIVITY OF KNOWLEDGE

#### I

Mill's denial that any items of human knowledge are justifiable through the operation of rational faculties affording a priori insight into truth represents one major strand of his empiricism. Here his quarrel was with a priorist views about the mode in which certain things which human beings know are warranted. He did not dispute that we do have genuine knowledge about logic and mathematics, but he challenged the notion that the basis of that knowledge lies in any kind of a priori intuition. We saw that he was willing to allow that some propositions of logic may be beneath the call for justification altogether; but he never ceased to insist that experience alone could provide a justification for those propositions which required one.

There was, however, a second front on which Mill fought his war on behalf of empiricism against the a priorist foe. It seemed to him that inattention to the limits of our knowledge-gathering faculties had given rise to false views about what could be known. Empiricism, in his eyes, had to do battle not just with those who claimed the existence of non-experiential faculties by which we know some of those things which we indisputably do know, but also with the theorists who asserted that we can have certain kinds of knowledge which outrun experience - and which must therefore, according to Mill, be bogus. Prominent amongst the false views he believed to have arisen from neglect of the true limits of our knowledge is the view that there exist physical objects which are not reducible to the sensations by which we know them (or, as he sometimes put it - for instance, in the first chapter of the Examination - that there exist noumena as well as phenomena). At the basis of his case for what amounts to a version of idealism (though we shall see that Mill's development of this basis was not always consistently adhered to) is a principle which he adopted



from Sir William Hamilton, who had expounded the 'great axiom that all human knowledge ... is only of the relative or phaenomenal' (Hamilton (1865), vol.1, p.136). Mill's doctrine of the 'relativity of human knowledge' and its implications for his views on semantic and metaphysical questions will be the concern of the present and the following chapter, by the end of which we will be in a position to evaluate his empiricist philosophy as a whole.

## II

The relativity of knowledge is one of the most fundamental tenets of Mill's empiricist philosophy, and his commitment to it never faltered. But the expression the 'relativity of knowledge' is vague (as Mill himself admitted (EH, p.4)), and it takes an effort of interpretation to elicit precisely what it meant to him. While his account of the principle avowedly owes something to Hamilton's treatment of it, it is offputting to find that Hamilton himself believed that almost all philosophers had accepted it; for if that were true, it would be difficult to see how it could then be taken by Mill to represent a distinctively empiricist thesis. According to Hamilton's Discussions on Philosophy [&c.], it is a commonly accepted doctrine that 'our knowledge of mind and of matter is relative, - conditioned, - relatively conditioned,' by which is meant that 'as substances, we know not what is Matter and are ignorant of what is Mind,' - our knowledge being properly not of substances but of phenomena. Indeed, 'this is perhaps the truth of all others most harmoniously re-echoed by every philosopher of every school'; and 'to attribute any merit, or any singularity to its recognition by any individual thinker, more especially in modern times, betrays only the ignorance of the encomiasts' (Hamilton (1866), pp.639-40).

Hamilton provided some further characterisation of the relativity of knowledge in his Lectures. The term 'relative,' he explained, was to be understood as opposed to the term 'absolute,' and what the doctrine affirmed was that 'we know nothing absolute, - nothing existing absolutely, that is, in and for itself, and without relation to us and our faculties.' Thus:

In so far as matter is a name for something known,  
it means that which appears to us under the forms  
of extension, solidity, divisibility, figure, motion,

roughness, smoothness, colour, heat, cold, &c.;  
in short, it is a common name for a certain series,  
or aggregate, or complement, of appearances or  
phaenomena manifested in coexistence (Hamilton  
(1865), vol.1, p.137).

This parallels a passage in the Discussions on Philosophy in which Hamilton wrote that, 'Existence absolutely and in itself, is as zero,' and that all our knowledge is of 'qualities, phaenomena, properties, &c.,' which 'exist, since they are known, and are known, because they exist' (Hamilton (1866), p.54).

How widely something like this relativity doctrine has been accepted is an interesting and difficult question for students of the history of philosophy, but one that cannot be pursued here. An obvious problem is that Hamilton's various attempts to characterise the doctrine never managed wholly to dispel a certain mistiness surrounding it, and one might reasonably expect that the number of those philosophers who could be described as its adherents will be directly proportional to the degree of flexibility of its interpretation. As Mill noted, the relativity principle can be taken as an 'insignificant truism' not really worth stating, as: 'we can only know what we have the power of knowing,' or else that 'all our knowledge is relative to us inas-  
much as it is we that know it' (EH, p.12). Such propositions are scarcely likely to find dissenters, yet, as Mill said, they are 'hardly worth enunciating in words' (EH, p.4). Hamilton in fact provided a long and learned series of quotations from famous writers in order to bolster his claim that the relativity of knowledge had been fairly universally accepted by philosophers; but Mill observed in a passage appearing in the 1856 and 1862 editions of the Logic that most of the quotations indicated nothing more than that Hamilton's authorities had accepted the principle that 'our knowledge of external things is necessarily conditioned by the laws of our knowing faculty' (SL, p. 60).<sup>1</sup> A careful scrutiny of Hamilton's quotations does undoubtedly bear out Mill's contention that they quite fail to establish that most previous philosophers had believed in any strong version of the relativity principle to the effect that all knowledge is knowledge of phenomena alone.

Mill explained his own understanding of the relativity of knowledge with some care, though we shall see that even his exposition of the doctrine, while greatly superior to Hamilton's, presents certain exegetical problems. It is evidence of the importance which he ascribed to epistemological relativity that he made it the topic of the first

major chapter of the Examination. What does it mean, he asked there, to ascribe attributes to objects? Someone who says of an orange presented to him that it is soft and yellow will say these things on the basis of his visual and tactual sensations. But of the orange 'in itself,' claimed Mill, he properly knows nothing: what his senses supply are but impressions or sensations of the orange's phenomenal appearance, and these are all he knows of it. Supporters of the relativity principle will maintain that

all the attributes which we ascribe to objects, consist in their having the power of exciting one or another variety of sensation in our mind; that to us the properties of an object have this and no other meaning; that an object is to us nothing else than that which affects our senses in a certain manner; that we are incapable of attaching to the word object, any other meaning; that even an imaginary object is but a conception, such as we are able to form, of something which would affect our senses in some new way; so that our knowledge of objects, and even our fancies about objects, consist of nothing but the sensations which they excite, or which we imagine them exciting, in ourselves (EH, p.6).

Years before, in the Logic, Mill had upheld exactly the same doctrine (though he did not then label it 'the relativity of knowledge'). 'All we know of objects,' he wrote, 'is the sensations which they give us, and the order of those sensations' (SL, p.59); and a little later:

... of the nature of either body or mind, further than the feelings which the former excites, and which the latter experiences, we do not, according to the best existing doctrine, know anything; ... (SL, p.64).

In another early work, the essay on Coleridge, Mill very explicitly associated epistemological relativity with the other pole of his empiricism, the attack on the notion of faculties of a priori knowledge:

The nature and laws of Things in themselves, or of the hidden causes of the phenomena which are the objects of experience, appear to us radically inaccessible to the human faculties. We see no ground for believing that anything can be the object of our knowledge except our experience, and what can

be inferred from experience by the analogies of experience itself; nor that there is any idea, feeling, or power in the human mind, which, in order to account for it, requires that its origin should be referred to any other source (CO, pp.128-29).

That is to say: Experience can only provide us with knowledge of phenomena, not of things in themselves (which is the relativity doctrine, though not presented under that name); yet a survey of the intellectual contents of human minds does not reveal anything whose presence there cannot be quite satisfactorily accounted for by experience. (Mill thus dismissed the idea of Coleridge and others that some of the things we know could only be the fruit of a priori faculties.) This is one of the most succinct statements of his empiricist philosophy that Mill ever gave, and he professed his indebtedness for his ideas to Locke and his eighteenth century followers who, he said, believed that 'Sensation, and the mind's consciousness of its own acts, are not only the exclusive sources, but the sole materials of our knowledge' (CO, p.125).

It is clear that the relativity principle as Mill understands it is incompatible with direct realist theories of perception, which hold that we can have immediate perceptual contact with physical objects; and it is therefore incompatible with common-sense or 'naive' realism, which is a form of direct realism. But it is also inconsistent even with indirect realism, for that doctrine allows that we perceive physical objects, albeit indirectly through having sense-data of them, while Mill's view is that we do not perceive those objects (as distinct from our sensations) at all. The sole knowledge we derive from perception, on his relativity analysis, is knowledge of the sensations we are actually having, and not of external objects (of which he employs the Kantian term 'things in themselves' and declares that they are 'radically inaccessible to the human faculties').<sup>2</sup> Neither direct realists nor indirect realists would accept this, and it becomes very clear that Hamilton's claim that the relativity of knowledge had been accepted by virtually all philosophers, and even the much more modest proposal that the prevailing eighteenth century theory of knowledge had upheld it, are alike false. (Locke, for instance, though Mill hailed him as a precursor, can be most plausibly ascribed a form of indirect realist theory of perception.)<sup>3</sup> It seems, however, that the radical character of epistemological relativity was not apparent to Mill when he produced his first expositions of it. He ventured in the Logic a claim scarcely less bold than Hamilton's, asserting that

the relativity of knowledge 'is a truth both obvious in itself, and admitted by all whom it is at present necessary to take into consideration' (SL, p.62) - by which phrase he apparently intended to capture not just his British empiricist predecessors but also Kant and his major continental followers. Although this passage was allowed to stand in later editions of the Logic, Mill added candid notes admitting that it was a mistake to ascribe the relativity doctrine to the generality of philosophers, and that 'dissentients have manifested themselves in considerably greater numbers than I had any knowledge of when the passage in the text was written' (SL, p.63).

Obviously feeling that the precise nature of the relativity doctrine remained in need of clarification, and hoping to sort out the muddles as to just who were the philosophers to whom it could reasonably be ascribed, Mill suggested in the Examination that there were really two variant forms of the doctrine, one appealing more to philosophers of an idealist inclination (among which company he enrolled himself), and the other being preferred by the followers of Kant. On the idealist alternative, there is no positing of external, noumenal objects to serve in the role of causes of our sensations: this version of the relativity doctrine holds that there is

no evidence of anything which, not being itself a sensation, is a substratum or hidden cause of sensations. The idea of such a substratum is a purely mental creation, to which we have no reason to think that there is any corresponding reality exterior to our minds (EH, p.6).

Kantians, on the other hand, say that while sensation provides no knowledge of noumena, these noumena or 'things in themselves' nevertheless exist, and are the causes of our sensations. On the Kantian view, as Mill presented it, 'External things exist, and have an inmost nature, but their inmost nature is inaccessible to our faculties. We know it not, and can assert nothing of it with a meaning' (EH, p.7). Although both forms of relativity limit substantive perceptual knowledge to knowledge of our sensations, the latter form does permit the further claim that we know about noumenal objects the bare fact of their existence as the causal ground of our sensations. Mill took a dim view of noumena, thinking their postulation gratuitous, but he was willing to grant that so long as their defenders did not assert that we could know anything about what noumena were really like, they could still be ascribed a version of the relativity principle.<sup>4</sup>

Both idealists and Kantians can accept the generalised expression

of the relativity doctrine that 'All we know in perception are our sensations,' but this surface agreement masks the important divergence just below. (The most significant of Mill's criticisms of Hamilton is that he vacillated between these two forms of the doctrine.) Yet there is a further ambiguity about the sense of the relativity doctrine which Mill never noticed, and which becomes apparent in his attempts to explain and defend his own favoured form of relativity. Sometimes he presents this as a theory about evidence, to the effect that we lack adequate warrant for positing the existence of external objects not reducible to the sensations which are the exclusive material of our knowledge. But if here the doctrine appears to be fairly straightforwardly epistemological in nature, concerned with delimiting the range of knowledge claims our experience entitles us to make, at other times it takes on much more of a semantic appearance, as if its primary concern is to characterise the limits of meaningful human discourse. Thus while Mill spoke, in one place, of the relativity principle as 'a proposition respecting the nature and limits of our knowledge' (EH, p.4) - which suggests the epistemological interpretation - we find him shortly after asserting that although it would be 'absurd to assume that our words exhaust the possibilities of Being,' still, there is no way in which we could speak meaningfully of those aspects of reality which are inaccessible to our faculties: 'But we ought not to speak of these modes of Being by any of the names we possess. These are all inapplicable, because they all stand for known modes of Being' (EH, p.11). It would not even make sense for us, continued Mill, to assert that if there were noumena, God could know what their nature was, for to say this 'is to use language which to us has no meaning, because we have no faculties by which to apprehend that there is any such thing for him to know' (*ibid.*).<sup>5</sup> In presenting the Kantian alternative version of the relativity principle, Mill again found it inviting to mention meaning, saying that while Kantians upheld the existence of noumena as the causes of our sensations, they acknowledged that we cannot meaningfully assert anything about the inmost nature of noumena (EH, p.7). Yet the fact that he followed Hamilton's example in speaking of the relativity of knowledge rather than the relativity of meaning suggests that the doctrine originally possessed for him a stronger epistemological than a semantic significance, and it might be fair to regard the more semantically orientated formulations of it as representing something of a development from his earliest conception of the principle.

In its semantic guise, Mill's relativity principle appears to be

extremely close to the position which a twentieth century empiricist philosopher, Jonathan Bennett, has termed 'meaning empiricism.' In Bennett's view,

... to understand any statement, I must be able to connect the difference between its truth and its falsity with some difference it could make to me - some difference in the data, the raw chunks of reality, with which I am confronted, i.e. in the sensory states which I have or, as Berkeley would say, in the ideas I perceive (Bennett, p.136).

To accept meaning empiricism, Bennett claims, is to have a reason for adopting a phenomenalist metaphysic; and he urges that someone who says, 'Whatever I know about my sensory states, there remains the further question whether there is really a world of things outside me' has misunderstood the question, 'Is there a world of things outside me?' (*ibid.*). Bennett's point would seem to be that the phrase 'a world of things' could not be assigned an intelligible meaning unless it were explained as referring to sensory states, which alone form the material of my experience. Such a thought is exactly what Mill was expressing when he spoke of the meaninglessness of language purporting to refer to noumenal objects which we cannot experience.<sup>6</sup>

### III

It is illuminating to consider Mill's principle of the relativity of human knowledge as a thesis of an anti-realist kind, in the sense of that phrase which has been expounded by Michael Dummett in a number of writings over the last few years. Even when he shifts, apparently unconsciously, between epistemological and semantic forms of the relativity doctrine, Mill can be credited with a degree of anticipation of the insight of modern anti-realists that questions about meaning, understanding, truth and conditions for warranted assertion are inter-related in an intimate and highly complex manner. It is evident that in arguing for the relativity of knowledge, Mill was moved by the desire, common among anti-realists, to 'narrow the gulf between what makes a statement true and that by means of which we recognize it as true' (Dummett (1981), p.443) - that is, he wanted to resist the idea that what needs to be the case for statements to be true might be quite different from what we have to be aware of in order to know that they

are true. In Mill's view, all experience was of the phenomenal realm: but how could it, then, provide knowledge of the experience-transcendent realm of noumena? Attempts to analyse the truth conditions of physical object language in terms of noumenal existence seemed to him to encounter serious epistemological and semantic difficulties which were to be avoided only by paying due attention to the relativity of human knowledge.

According to Dummett, realism maintains that the existence and constitution of reality are objective and independent of our knowing faculties; thus, for instance:

Realism about the physical world entails that there is a determinate physical reality which renders true or false any statement we may make about material objects, independently of whether we can make any observations directly or indirectly confirming or disconfirming it (Dummett (1981), p.434).

Dummett adds that realist views are views about the appropriate notion of truth for statements of a given class, and consequently, because of the close connexion between truth and meaning, about the kind of meaning they have. To clarify this account of realism, he suggests that we do best to think of realist theories as based on 'a completely unmodified classical two-valued semantics,' according to which all statements of a given class are determined as true or false by the reality to which they relate, and wholly independently of whether or not we possess the ability to tell whether their truth conditions are satisfied (Dummett (1981), p.441).

In Chapter Five, we saw that Mill's philosophy of logic is unmistakably realist in tenor, accepting unreservedly the 'completely unmodified classical two-valued semantics' which Dummett identifies as providing the quintessential basis of realism. And yet, when he proclaims the truth of the principle of the relativity of knowledge, Mill shows himself strongly committed to an anti-realist position about truth and meaning! I think we just have to accept that there is a fundamental cleavage running through Mill's philosophy, and one of which he never became aware. As a philosopher of logic, he never displayed the slightest tendency to deviate from realism; but it is likely that his consistent realism in this area was less the outcome of any reasoned rejection of anti-realist claims than of a simple failure to reflect that there might be anything problematic about the realism traditional in logical studies. In metaphysics and epistemology, by contrast, Mill saw the lie of the land entirely differently.



Here it seemed to him that realism was extremely problematic - so problematic, indeed, that it should be rejected altogether. Once the truth of the relativity principle was recognised, a realist perspective could no longer be sustained - and, in Mill's view, the case for relativity was irrefutable.

Postponing for the present any further discussion of the inconsistency of Mill's philosophy, it is worth asking further why he, or anyone else, should want to reject realism about a given area of discourse. The general answer to this question is that realism encounters difficulties in explaining how statements of certain categories can be grasped and used by us, if their meaning is what the realist says it is. Realism involves the notion that understanding statements is knowing their truth conditions; and that is a prima facie plausible idea when we reflect that if statements are determined as true or false by the reality to which they relate, then what we need to know in order to understand them looks as if it must be what those conditions are which determine their truth-value. But problems arise with this very natural line of thinking just because the truth conditions of some statements appear to be such that nothing we could do would in fact establish whether they obtained or not. Much of the contemporary debate between realists and anti-realists about the relationship between truth conditions and meaning goes, admittedly, into issues of greater subtlety than were ever raised by Mill. He did not, for instance, consider the claim made by many anti-realists today, and inspired by Wittgenstein, that knowledge of the truth conditions of a statement cannot be ascribed in the absence of knowledge of how to determine whether those conditions obtain, on the ground that where the latter knowledge is missing, there is no criterion to justify ascription of the former. This claim has played a prominent role in recent debate, because it counters the realist's contention that understanding a statement always consists in grasping its truth conditions, even where it is not possible to establish whether those conditions obtain. Thus when the realist urges that understanding, say, Goldbach's Conjecture (that every even number is the sum of two primes) is a matter of knowing its truth conditions, even though no mathematician currently knows how to establish whether those conditions hold, the anti-realist questions whether the realist account of understanding the Conjecture is properly intelligible. It seems that the realist is 'being led to making knowledge attributions that lack defensible content' (Platts, p.12), for he is quite unable to provide any satisfactory criterion to ground his ascription of knowledge of what the

Conjecture means.

Mill's anti-realism had a somewhat more straightforward motivation than this very abstract Wittgensteinian argument about the criteria for ascribing knowledge of meaning. Mill wanted to know how it is that we actually manage to make statements about physical objects, and he realised that the explanation of this ability could not be that we can determine how things are in the realm of noumena. If the truth conditions of physical object statements consist in certain states of affairs holding in the noumenal realm, then it becomes, in Mill's view, utterly mysterious how we can make such statements, for the truth conditions are of a recognition-transcendent kind. It seemed quite clear to him, however, that what actually warrant our assertions about physical objects are our experiences of phenomenal appearances; and from here it is an easy step towards characterising the meanings of physical object statements in experiential (i.e. phenomenal) terms. To be sure, Mill did not have on hand the Wittgensteinian argument to support the thesis that knowledge of the meaning of a statement should not be explained in terms of grasping any recognition-transcendent truth conditions; but he probably felt that such an account of understanding a statement is uninviting because it divorces completely our understanding a statement from our knowing what enables us to assert it (that is, the realist account of understanding a physical object statement makes that understanding apparently quite idle, if our warrant for asserting it is our having certain phenomenal experiences). Mill's reflections on the conditions for making physical object statements thus led him towards the semantic form of the principle of the relativity of knowledge, for if phenomenal experience provides the only available basis for making assertions about the physical world, there fails to be any motivation for explaining the meaning of physical object language in any other than phenomenal terms.

It is always important in discussing the ideas of an older philosopher in terms of a contemporary debate to avoid anachronistically attributing to him concerns which, at his date, he could not or would not have entertained in the manner in which philosophers of the present day entertain them. Yet while Mill's discussion of the nature of physical object language was not produced in the full awareness of the complex range of issues which modern realists and anti-realists debate, it is not unreasonable to classify him, on the basis of that discussion, as an anti-realist about the physical world. The epistemological form of the relativity principle is already anti-realist in so far as it brings into question the existence of objects of a recognition-transc-

endent kind. But in espousing the semantic version of the principle, Mill came still closer towards the position of modern anti-realism, for he held that the meaning of physical object language required analysing in a way which left it intelligible how human beings, with the epistemic faculties they possess, can grasp the senses of physical object statements: and that required, he thought, explaining the meanings of those statements in sensational terms. Although he expressed himself with less explicitness than one might expect from the contemporary anti-realist, Mill was no less ready to reject the realist position that physical object statements are determined as true or false by a reality which is independent of our ability to ascertain whether they are true or false - the view that there is a 'gulf between what makes a statement true and that by means of which we recognize it as true.' To admit the existence of such a gulf seemed to him to be no less un-empiricist than to allow the possibility of a priori knowledge, an error which arose equally out of the failure to pay proper attention to the character and limits of human epistemic faculties.

#### IV

Mill's adherence to the principle of the relativity of knowledge led him in the Logic not to reject, but to reinterpret traditional theories of the 'variety of things.' Though the relativity principle led him inexorably in the direction of idealism, it did not cause him to abstain from distinguishing substances, attributes, minds and feelings. Nevertheless, when summing up the results of his study in Book One of 'the varieties of Things which have been, or which are capable of being, named' (i.e. either predicated of other things, or being made the subjects of predications themselves), he took care to give a reminder of his own view that 'all we can know of Matter is the sensations which it gives us, and the order of occurrence of those sensations' (SL, pp.75-76). In addition, he suggested a relativised account of attributes, which, he declared, 'are to us nothing but either our sensations and other states of feeling, or something inextricably involved therein' (SL, p.76).

The Logic's account of attributes is interesting as an attempt to provide a fairly detailed relativistic theory of a most uncompromising kind. Mill distinguished three classes of attributes, namely qualities, relations and quantities, and explained each class relativistically.

Thus:

Qualities, like substances, are known to us no otherwise than by the sensations or other states of consciousness which they excite: and while, in compliance with common usage, we have continued to speak of them as a distinct class of Things, we showed that in predicating them no one means to predicate anything but those sensations or states of consciousness, on which they may be said to be grounded, and by which alone they can be defined or described (ibid.).

Similarly, relations are said to be 'grounded on some fact or phenomenon, that is, on some series of sensations or states of consciousness, more or less complicated' (ibid.). And: 'The third species of Attribute, Quantity, is also manifestly grounded on something in our sensations or states of feeling' (ibid.). Any non-relativistic view of attributes seemed to Mill to be out of the question; 'for the doctrine of the existence of a peculiar [non-relativised] species of entity called quantities,' he wrote, 'I can see no foundation except in a tendency of the human mind which is the cause of many delusions' (SL, p.66). And in a note added to the 1856 edition of the work he associated his position with Herbert Spencer's, asserting boldly that 'neither of us believes an attribute to be a real thing, possessed of objective existence,' and that 'The meaning of any general name is some outward or inward phenomenon, consisting, in the last resort, of feelings' (SL, p.179).

Just as the relativity doctrine for physical objects came in variant forms, so too does relativism about attributes admit of more than one interpretation. On the version which would have attracted Mill the least, and which may be seen as the most Kantian, attributes are a real species of entity but, like noumena, are unknowable (or perhaps: incapable of being meaningfully spoken of) by us, even though we can experience the sensations for which they are causally responsible. Mill never specifically discussed such a view, though it is unlikely that he failed to recognise that the notion of what might be called 'noumenal attributes' would be of some appeal to Kantians. In presenting his own relativised theory of attributes, Mill showed a preference for a semantic rather than an epistemological rendering of relativity, possibly because the discussion of attributes is associated with an investigation into the semantics of general terms, and his attention was chiefly on questions about meaning at this point in the

Logic. Thus he treated the postulation of a real species of non-reducible attributes as a mistake about the meaning of general terms; our words, he maintained, can be applied only to our experience, and the stuff of experience is sensation; and therefore it is wrong to construe attribute talk as talk about a kind of entity of which we can have no experience. Attributes have to be, on this view, identifiable in some manner with sensations, and Mill went to some trouble to throw light on the nature of the identity. Wishing at the same time, however, to retain the interest of non-idealist readers in his discussion of the semantics of general terms, he opted for saying, with deliberate and avowed ambiguity, that attributes are 'grounded on' sensations - a form of speech which different readers would choose to interpret in different ways, idealists like himself construing the 'grounding' as the ontological reducibility of attributes to sensations, and non-idealists taking it to be a relation of an epistemic kind, sensations being our evidence for ascriptions of attributes. This language, Mill blithely declared, should be seen to be 'compatible with either view of the nature of qualities,' and to 'admit of no dispute' (SL, p.67; cf. ibid. pp.65, 68, 71, 73, 75, 76, 77). It is true that even someone who rejected all forms of the relativity doctrine, and held that attributes were neither beyond experience nor to be equated with sensations, would find it hard to deny that it is through sensation that we experience them. But Mill's evident satisfaction at having discovered a form of words describing the relation of attributes to sensations which philosophers of conflicting views can agree upon hardly seems very justifiable; for the agreement is not only a purely verbal one, but is also dangerously liable to mislead those who are parties to it into believing that their views are in closer accord than they really are.

Mill's theory that talk about attributes is really talk about sensations, which effectively reduces attributes to sensations, has to face a difficulty which he seems not to have noticed until his attention was drawn to it by Spencer. The source of the problem is that there are considerable differences between the ways in which we normally regard the identity conditions of attributes and sensations. If I look at my bookcase now and in half an hour's time, I will be having numerically different sensations of it, but I will judge it each time to have the single colour quality of being brown. Again, if I look from the bookcase to a brown car passing outside my window, I will ascribe the same colour attribute to both the bookcase and the car, though clearly my sensations of the two objects are numer-

ically distinct.<sup>7</sup> Spencer drew the somewhat curious conclusion from his reflections on examples like these that wherever we distinguish sensations as numerically distinct, we should refrain from speaking of numerically identical attributes, and talk instead of attributes which are only exactly alike (Spencer (1855), pp.125-27). Mill would have none of this, and for sound reasons:

If every general conception, instead of being 'the One in the Many,' were considered to be as many different conceptions as there are things to which it is applicable, there would be no such thing as general language. A name would have no general meaning if man connoted one thing when predicated of John, and another, though closely resembling, thing when predicated of William (SL, p.179).

But while Spencer's theory is an unsatisfactory one, Mill granted that he had raised a question which demanded an answer: 'What, then, is the common something which gives a meaning to the general name?' (*ibid.*).

In answering this question, Mill made use of the fact that sensations which are numerically distinct can yet be qualitatively similar - a fact which Spencer, too, had observed, though he found in it a different significance. Mill's solution to the problem of the nature of attributes was actually to identify them with the similarities among sensations:

The names of attributes are in their ultimate analysis names for the resemblances of our sensations (or other feelings). Every general name, whether concrete or abstract, denotes or connotes one or more of these resemblances. ... The things compared are many, but the something common to all of them must be conceived as one, just as the name is conceived as one, though corresponding to numerically different sensations of sound every time it is pronounced. ... The general term man does not connote the sensations derived once from one man... It connotes the general type of the sensations derived always from all men, and the power (always thought of as one) of producing sensations of that type (SL, pp.179-80).

Thus Mill in the 1856 edition of the Logic. Thirteen years later in a note to his edition of James Mill's Analysis he repeated the claim that:

The only meaning of predicating a quality at all, is to affirm a resemblance. When we ascribe a quality to an object, we intend to assert that the object affects us in a manner similar to that in which we are affected by a known class of objects (AN, vol.1, p.261).

Mill was apparently unaware that in the 1856 presentation of his theory of attributes, he was actually putting forward two non-equivalent views of the relationship of attributes to sensations. On the first, attributes are the resemblances among sensations, so that the attribute of being brown is identical to the resemblance or similarity between all the numerically distinct sensations of brown which I and others have. But the second account has it that attributes are to be identified with type (as distinct from token) sensations, the attribute brownness being the type of which all your and my numerically distinct sensations of brown are tokens. Both accounts aim to capture the generality which is characteristic of attributes, but whereas one treats attributes as relations among sensations, the other construes them as a special sort of relatend to which sensations are related - related, moreover, by the logical relation of being tokens of a type, which is not identical with any relation of qualitative similarity between individual sensations.

Unfortunately for Mill, neither of these accounts works at all well. Take first the theory of attributes as type-sensations. There need be no quarrel with the claim that a type/token distinction can be drawn for sensations along the lines sketched above. But Mill cannot coherently employ that distinction in support of his relativistic theory of attributes. The difficulty comes into view when we reflect on the conditions for saying that an individual sensation is a token of a certain type-sensation. Sensations have objects, and it can only be the identity of their objects which determines their status as tokens of the same type. If I have a sensation of brown and you do so as well, our sensations can be said to be tokens of the same type-sensation (in other words, they can be spoken of as the same sensation in the type sense of that phrase) because of the identity of their objects. But what is the object common to your and my sensations? The answer to this question must surely be: the attribute brownness. Yet this answer is not available to Mill, for it is in order to explain what

attributes are that he has introduced the type/token distinction, and if he cannot expound this distinction without reference to attributes, then he cannot use it to say what attributes are, on pain of circularity. It is inadmissible to characterise the attribute brownness as a certain type-sensation, if identification of that type-sensation is to be in terms of its being the type of which individual sensations of the attribute brownness are tokens. If Mill could provide an account of what makes your and my sensations of brownness tokens of the same type without referring to those sensations having as their common object the attribute brownness, he could evade the present objection; but it is not clear that any such alternative account could be given. Someone might suggest that what makes individual sensations of brown tokens of the same type is that they all have the same phenomenological feel to their subject(s). But if the notion of the phenomenological feel of a sensation is not to be a mere obfuscation of the issue, it needs an explanation which is naturally provided by saying that two sensations have the same phenomenological feel when they have the same object; and specification of the common object of two sensations of brown requires a reference to the attribute brownness. (In support of this view note that any attempt to specify in what the sameness of phenomenological feel of two sensations of brown consists which does not mention the fact that they are both sensations of brown appears essentially incomplete.)

Mill's alternative theory of attributes - and, indeed, the one on which he laid the greater stress - was that they are resemblances between sensations. But this theory faces the same difficulty as the other: it explains attributes in a manner which presupposes that the notion of an attribute is already understood. It is perfectly reasonable to talk of resemblances among our sensations. But it is obscure how we could do so unless we meant to refer to resemblances in respect of their objects; my sensation of brown resembles yours, or resembles another sensation of mine at a different time, just because they are uniformly sensations of brown - which is to say, because they are sensations of the same attribute of brownness. In asserting that it is the resemblance itself which is the attribute, Mill forgot that there cannot be bare resemblance which is not resemblance in respect of some common feature, and the feature common to two or more sensations of brown is precisely that they have objects which need to be specified in terms of a common attribute. Mill erred in failing to see the truth stressed by Bradley among others, that resemblance is posterior, not prior, to universals - that is, that we cannot speak



of things resembling each other unless we identify a universal (a quality or respect) common to them.<sup>8</sup>

It may be admitted that there have been philosophers who (for other reasons than Mill's) have attempted to view resemblance as a primitive relation not requiring for its analysis any reference to universals such as attributes. Resemblance nominalists like H.H. Price have tried to argue that we can rightly call a number of things by the same general term in the case where all the things can be affirmed to resemble the members of a certain set of exemplars more closely than they resemble anything else (Price (1953), ch.1). There are several powerful objections to resemblance nominalism, among which is the insuperable one that resemblance nominalists cannot ultimately avoid treating resemblance itself as a universal.<sup>9</sup> (It is of some incidental interest here that resemblance nominalists have appealed to a notion of primitive resemblance in order to dispense with universals, whereas Mill held that attributes could actually be analysed in terms of such resemblances!) But the notion of resemblance which is not resemblance-in-respect-of a common characteristic remains a basically obscure and uninviting one. As Richard Wollheim has said:

Universals cannot be made to rest upon judgements of resemblance: for every judgement of resemblance presupposes a universal. Resemblance, so far from being the creator of, becomes a mere parasite upon, universals: universals are prior to resemblance (Wollheim, p.37).

The objection to Mill's theory can be put by rephrasing a part of this: Resemblance among sensations, so far from being the creator of, becomes a mere parasite upon, attributes: attributes are prior to resemblance among sensations.

The problems with Mill's account of attributes indicate that, in this area at least, his theory of the relativity of knowledge is very defective. It does not, on examination, prove at all plausible to affirm that attributes are reducible to sensations. But it would not be a reasonable conclusion from this to infer that the relativity doctrine must be rejected altogether, or that the idealism for which it offers strong support is untenable. A more lenient verdict would be that Mill was mistaken in trying to apply the relativity principle to attributes, and should not have attempted to reduce them to sensations. He could, for instance, have identified attributes with concepts, where these are construed as wholly mental principles for sorting and classifying the sensational content of experience. Such a theory would

be consonant with idealism, yet would also do justice to the feature of generality which is characteristic of attributes. (It would be important, however, that the application of the same concept to different particulars was not held to be justified by the possession by those particulars of a common universal, or the identification of attributes with concepts would break down.) Whether Mill could have been brought to sympathise with a view of this kind, or whether he would have regarded the failure of his attempt to apply the relativity doctrine to attributes a reason for backtracking from idealism, we can only vainly speculate.

## E I G H T

## T H E   W O R L D   A N D   I T S   S U B J E C T

### I

Mill's fullest account of the nature of the external world and of the relation to it of the knowing subject is to be found in the eleventh chapter of the Examination, 'The Psychological Theory of the Belief in an External World.' Mill was evidently very pleased with this chapter, and a few years after its first appearance he reprinted it unchanged as an appendix to his edition of his father's Analysis. Bain, too, was impressed by Mill's discussion, and wrote in reference to it, 'I give him full credit for his uncompromising Idealism, and for his varied and forceful exposition of it' (Bain (1882), p.120). Some critics, however, were less flattering; James M'Cosh, for instance, scornfully classed Mill's theory with the 'wire-drawn attempts to fashion all our ideas out of one or two primitive sources by means of association,' which were among the more baneful products of the tradition of Locke (M'Cosh, p.21). But many of Mill's readers from early days to the present have noted that it is actually far from easy to be sure just what view of the external world he intended to maintain, and, indeed, whether he really had a firm view at all. R.F. Anschutz has claimed that he was trying to be all things to all men, and to satisfy both the Berkeleian and the realist (Anschutz (1953, p.178); Alan Ryan holds that he simply could not make up his mind whether he intended to deny the existence of the external world or not (Ryan (1974), p.222).

Some of the problems which readers have had with Mill's chapter resolve themselves when it is studied in relation to views which he urged elsewhere; but I shall argue that there remains one critical ambiguity about his theory of the external world which cannot be argued away, and also that he was more than a little ambivalent about the importance of the role played by the laws of association in that

theory. Yet despite these serious flaws, there is much that is insightful and stimulating in Mill's discussion of the external world and of our relation to it, and it deserves far better than the glibly dismissive treatment which it commonly receives.

## II

One of the confusing features of Mill's chapter on the belief in an external world is that it has two objectives which he takes no great pains to distinguish from each other. The first of these is to provide a psychological explanation of our belief in the existence of a world of things outside us. The second is to justify an idealist, or alternatively (and, as we shall see, inconsistently) an immaterialist interpretation of the nature of physical objects. These objectives are obviously not wholly logically independent of each other; for instance, some possible psychological explanations of how the belief in an external world arises would preclude the provision of any other than a realist metaphysical theory of the world, and Mill is able to present an anti-realist metaphysical account only because his psychological theory is not one of these. Still, the twin tasks of the chapter are distinct, and Mill would have assisted his reader by acknowledging the fact.<sup>1</sup>

What is the content of the belief that there is an external world? Mill suggested that to hold that objects 'exist external to us, and are not a part of our own thoughts' amounts to holding that:

there is concerned in our perceptions something which exists when we are not thinking of it; which existed before we had ever thought of it, and would exist if we were annihilated; and further, that there exist things which we never saw, touched, or otherwise perceived, and things which never have been perceived by man (EH, p.179).

The psychological task Mill set himself was to explain how we come to have such a conception of reality. One might then have expected that his metaphysical discussion would produce the arguments for regarding the common-sense belief in an external world so conceived as mistaken. But not so: Mill, like Berkeley, claimed that his purpose was not to reject, but to reconstrue (along suitably reductionist lines) the notion of an external world. How well he succeeded in this

exceedingly difficult enterprise we shall examine by and by; but it is hardly to be wondered at that the fact that he attempted such an act of philosophical tightrope-walking at all has led some commentators to accuse him of uncertainty as to whether to accept the existence of the external world or not.

Mill claimed that his 'psychological theory of the belief in an external world' rested on two postulates, the first that the mind is capable of forming expectations about the sensations it would feel under certain hypothetical conditions, the second that it is governed by the laws of the association of ideas (EH, p.177). Associationist psychology was an inheritance from the British empiricist tradition, and in particular from the thought of the eighteenth century philosopher and physician David Hartley, whose Observations on Man (1749) had greatly impressed the youthful Mill (AU, p.71). Not just 'ideas' but mental phenomena in general, including sensations and 'remiscences of sensation,' Mill thought were subject to the force of association. In the Examination he identified four laws of association as playing a role in the development of the belief in an external world:

- (1) Similar phenomena tend to be thought of together;
- (2) Phenomena which have either been experienced or conceived in close contiguity to one another, tend to be thought of together;
- (3) Associations produced by contiguity become more certain and rapid by repetition;
- (4) When an association has acquired the character of inseparability, the idea called up by association becomes inseparable from the idea which suggested it, and the facts or phenomena answering to those ideas come to seem inseparable in existence (EH, pp.177-78). <sup>2</sup>

Mill praised Hartley for discovering that 'mental phenomena, joined together by association, may form an ... intimate, and as it were, chemical union,' and by so doing greatly increasing the explanatory potential of psychology (BP, p.347). Among the mental phenomena which Mill believed the laws of association could account for were the notion of and the belief in an external world. There are, he proposed, associations naturally and even necessarily generated by the order of our sensations and remiscences of sensation, which, supposing no intuition of an external world to have existed in consciousness [which had been Hamilton's theory], would inevitably generate the belief, and would cause it to be regarded as an intuition (EH, p.178).

Having stated the laws of association, Mill apparently felt it to be unnecessary to go into much detail about exactly how those laws operate to produce the belief in an external world. He did, however, feel it incumbent upon him to say something about the origin of the conviction that objects persist in existence when we are not perceiving them. The conception of the 'perdurability' of objects, he wrote, is but the form impressed by the known laws of association upon the conception or notion, obtained by experience, of Contingent Sensations; by which are meant, sensations that are not in our present consciousness, and individually never were in our consciousness at all, but which in virtue of the laws to which we have learnt by experience that our sensations are subject, we know we should have felt under given supposable circumstances, and under these same circumstances might still feel (EH, p.179).

Readers of the first editions of the Examination found this still insufficiently enlightening, and Mill felt compelled to add an appendix to the third (1867) edition of the work in order to clarify this and other elements of his theory. If I have been accustomed, he explained here, to receiving simultaneous visual and tactual sensations from some object, e.g. a cast-iron ball, then on some occasion when I am having only visual sensations of it, the laws of association lead me to believe that the tactual sensations are possible as well - in other words, to believe the ball to have tangible qualities though I am not now touching it (EH, p.200). Yet one might object that this is still not sufficient for Mill's purposes. Association might lead us to believe that the visible ball has tangible qualities, but can it explain our believing that the ball continues to exist when we are having no sensations of it at all? Perhaps Mill could have strengthened his case by citing an example of the following kind. Suppose that I am used to walking down the High Street and seeing the baker's shop to the left of the draper's. If, then, on some occasion I happen to be so placed that I have only the baker's shop in my visual field, association, as Mill explained it, could cause me to believe, or rather sustain me in believing, that the draper's is still in existence on the right, though I am having no sensations of it.

But a further obscurity in Mill's account is how association is related to expectation, the second postulate which he held to be

necessary to the explanation of the belief in an external world. An apparently plausible suggestion would be that the two postulates are not really independent, and that expectation is itself governed by the mechanisms of association; but if that was Mill's view, he did not say so. Alternatively, one might wonder whether he could have thought that association raises ideas of 'contingent sensations,' and that expectation is a separate mental principle which creates belief that those sensations are truly possible. But once again, Mill gave no indication that he thought this. In fact it is an important objection to his account that it quite slurs over the distinction between ideas, notions and conceptions on the one hand and beliefs on the other, and betrays no recognition that it is one thing to have a notion of a kind of thing, for instance of unicorns, and quite another to believe that things of that kind exist. If, when I am having sensations of the baker's shop, association brings to my mind ideas of the draper's establishment next door, does it require an input from another mental faculty (expectation?) for me to believe that if I alter my visual field in a particular way, I will have sensations of the draper's? If Mill had any thoughts about this, he did not reveal them.

The picture becomes rather more than less confused by the résumé of his theory which Mill provided in the 1867 appendix. Here, astonishingly, association is not mentioned at all! The 'Psychological Theory' is now said to postulate:

first, Sensations; secondly, succession and simultaneousness of sensations; thirdly, an uniform order in their succession and simultaneousness, such that they are united in groups, the component sensations of which are in such a relation to one another, that when we experience one, we are authorized to expect all the rest, conditionally on certain antecedent sensations called organic, belonging to the kind of each (EH, p.201).

It might be thought that the theory expressed in this passage cannot be essentially different from before - that it must be associationism in all but name. Yet there is actually a crucial difference. Although mention is still made of the grouping of sensations, and of the mind moving from experienced sensations to thoughts of possible sensations, there is no longer any reference to mechanical or quasi-mechanical principles of mental organisation to govern the process. The restated theory leaves it open that there are no associative principles of mental states at all; rather, the proposal is that given a supply of

sensations forming a uniform sequence, one is entitled to infer ('authorized to expect') that other sensations would occur in certain specifiable circumstances. But this suggests that to form a belief in the existence of the external world, what one requires besides a stream of sensations is a logical faculty enabling one to draw inferences of the appropriate sort. Yet it seems unlikely that Mill was deliberately altering his theory as a result of some reasoned dissatisfaction with associationism. It is more likely that both in the 1865 and 1867 editions of the Examination he was simply failing to think through his ideas in a sufficiently careful way, and that he never made the 'Psychological Theory' precise enough for it to be easily evident, even to its author, when a deviation from it was taking place.

A plausible explanation of Mill's seeming carelessness in presenting his 'Psychological Theory' is that he was not ultimately very interested in the task of explaining the origin of our beliefs about external reality, and was much more concerned with the second of the two objectives I ascribed to him - that of providing an anti-realist metaphysical analysis of the nature of the external world. Probably he saw the first objective primarily as serving the second, and was not concerned to develop a psychological theory beyond the point at which it became apparent that explaining our belief in an external world did not positively require the postulation of an external reality of an obnoxiously realist kind. Despite their differences, neither the psychological theory of Chapter XI nor that of the later appendix are committed to realism in any sense in which Mill wanted to deny it. Perhaps he would have been content enough to settle in their place for any alternative empirical theory so long as it did not proclaim or presuppose realism. <sup>3</sup>

### III

Like Berkeley, Mill claimed that his metaphysical theory of the external world marked no deviation from the common-sense belief in objects outside the mind:

Matter, then, may be defined, a Permanent Possibility of Sensation. If I am asked, whether I believe in matter, I ask whether the questioner accepts this definition of it. If he does, I believe in matter: and so do all Berkeleians. In any other sense than



this, I do not. But I affirm with confidence, that this conception of Matter includes the whole meaning attached to it by the common world, apart from philosophical, and sometimes from theological, theories. The reliance of mankind on the real existence of visible and tangible objects, means reliance on the reality and permanence of Possibilities of visual and tactual sensations, when no such sensations are actually experienced (EH, p.183).

Dr. Johnson's 'argumentum baculinum' is based on a complete misunderstanding of Berkeley, in Mill's opinion, and all that the 'most esteemed metaphysical champions' of matter, such as Reid, Stewart and Brown, have in effect been arguing for is the existence of permanent possibilities of sensation (ibid.). It is the belief in these permanent possibilities on which alone any practical consequences depend, Mill maintained, and 'if nobody believed in a material universe in any other sense, life would go on exactly as it does now' (EH, pp.183-84).

It is clear that Mill's metaphysical theory of matter is not entailed by his psychological theory of the origin of the belief in an external world, in either its Chapter XI or appendix forms. For it is conceivable that our conviction of the existence of a world of things outside us arises from our sensations and our expectations of sensations according to one of the modes which Mill described, but this would leave it quite open whether or not there existed a world of objects outside us and irreducible to sensations. So what entitled him to put forward his Berkeleyan, or quasi-Berkeleyan, theory of matter as a sequel to his psychological reflections on the belief in external reality? Did he confusedly believe that the psychological theory does entail the metaphysical one?

There is no ground for ascribing to him such a gross confusion. The real justification he saw for his metaphysical theory of matter was the principle of the relativity of knowledge. Rather surprisingly, Mill nowhere in Chapter XI or the appendix referred to the principle by name, and yet its presence is everywhere felt. The possibility of noumenal existence is dismissed on the basis that we can know nothing beyond our sensations, all knowledge being not only by sensation, but also of sensation. Consequently, our knowledge of the existence of an external world cannot be knowledge of the existence of something which is, as Mill put it, 'intrinsically distinct' from sensation (EH, p.182). But how, then, in conformity to the relativity principle, is our knowledge of an external world to be construed? The exceedingly ingenious

suggestion Mill made is that external physical objects are to be understood as possibilities of sensation, which remain in existence even in the absence of actual sensations of objects. Why we should believe in the independent existence of possibilities of sensation he thought could be explained by the psychological theory; but the metaphysically significant point about the possibilities, in his opinion, was that they could be held to constitute a real, external world which was, however, in no way a world of noumenal substances. We come to think of our actual sensations as connected with 'groups of possibilities of sensation' (EH, p.181). But our sense of natural sequences of phenomena (whether a product of association, or of inference from experience) leads us to imagine changes taking place within the possibilities of sensation even when our attention is elsewhere:

Whether we are asleep or awake the fire goes out,  
and puts an end to one particular possibility of  
warmth and light. Whether we are present or absent  
the corn ripens, and brings a new possibility of  
food. Hence we speedily think of Nature as  
made up solely of these groups of possibilities,  
and the active force of Nature as manifested in the  
modification of some of these by others (ibid.).

And after a little while it is quite inevitable that we should come to think of the actual sensations we have, though they are in fact 'the original foundation of the whole,' as merely the 'representations, appearances, or effects' of the possibilities of sensation, which thus are thought of as 'much more real than the actual sensations' (ibid.).

#### IV

Mill's metaphysical theory of the external world was very greatly influenced by the idealism of Berkeley. Mill always expressed the most enthusiastic admiration for Berkeley's philosophy, and in a review essay he wrote near the end of his life actually said of him that 'of all who, from earliest times, have applied the powers of their minds to metaphysical enquiries, he is the one of greatest philosophic genius' (BL, p.451). Berkeley, Mill said - and he compared him here to Malebranche - had realised that the hypothesis of physical substance irreducible to sensation was by no means essential to account for the

character of our experience; indeed, such substance would be merely a 'superfluous wheel in the machinery' on which nothing depended (BL, p.462; cf. EH, p.204). <sup>4</sup> And Mill claimed Berkeley's authority for the view that:

in the case of matter there is no ground in experience or in anything else for regarding the sensations we are conscious of as signs of the presence of anything, except potentialities of other sensations (BL, p.459).

Yet in one important respect Mill believed that his own metaphysical theory of matter was an improvement on that of his admired predecessor. Berkeley, he suggested, had had a difficulty in accounting for the continuing numerical identity of an object which we have for a time ceased to perceive:

He supposed that the actual object of a sensible perception, though, on his own showing, only a group of sensations, and suspended so far as we are concerned when we cease to perceive it, comes back literally the same the next time it is perceived by us; and, being the same, must have been kept in existence in another mind.

What Berkeley failed to grasp, however, is that:

the sensations I have to-day are not the same as those I had yesterday, which are gone, never to return; but are only exactly similar ...

(BL, p.464).

Berkeley's theory, then, cannot make good sense of the common belief that objects are not merely ephemeral like sensations, but retain their numerical identity over extended periods of time. (This objection is more fundamental than the objection, often heard and quite correct, that Berkeley's introduction of God to perceive objects no one else is perceiving is inadmissibly ad hoc.)

Mill saw that Berkeley's problem arose because he identified physical objects with groups of actual sensations; and the solution to it, Mill thought, was to identify those objects rather with possibilities of sensation, which were neither transient like actual sensations, nor required for their existence that they should be held within some mind. So, when an object has existed unperceived,

what has been kept in continuous existence is but a potentiality of having ... sensations, or, to express it in other words, a law of uniformity of

nature, by virtue of which similar sensations might and would have recurred, at any intermediate time, under similar conditions (ibid.).<sup>5</sup>

Yet those sensations which I might have had but did not during some temporal interval, Mill added, are not 'a positive entity subsisting through that time'; there is not really 'any permanent object, mental any more than material, to keep up an identity which does not really exist'; they have only 'potential' existence (ibid.).

On the basis of his divergence from Berkeley over the analysis of existence unperceived, Mill has often been referred to as a phenomenalist rather than as an idealist; he has even been called by some the 'father of phenomenalism.' Although the difference between Mill's and Berkeley's views is a significant one, it is not at all clear that Mill is better described as a phenomenalist than as an idealist. For one thing, he himself preferred to stress the similarities rather than the differences between his theory and Berkeley's, and classed his position with that of the 'Berkeleians.' It is noteworthy too that while he never used either of the labels 'idealist' or 'phenomenalist' of his own philosophy, he did not object to a critic's terming it 'pure idealism.'<sup>6</sup> (Bain too, we have seen, referred to Mill's 'uncompromising Idealism.') But the sense of labels for philosophical views can change subtly over time, and it would be unsafe to conclude that nineteenth century usage of the term 'idealism' is the same as our own; probably, in fact, 'idealism' was employed with a wider sense then than now, so it could have covered as well as theories of the Berkeleyan type, those others which would nowadays attract the label 'phenomenalist.' What is more important than how nineteenth-century writers described Mill's views, however, is the point that those views are not in full accord with modern phenomenalist theories. Phenomenalists of the present day have a great deal to say about possible sensations; Mill, by contrast, spoke most frequently of possibilities of sensation. What he intended by this phrase often appears to have been somewhat different from what phenomenologists normally mean by talking about possible sensations.

Admittedly, this is not always so. Sometimes he used 'possibilities of sensation' as if this was only a stylistic variant for 'possible sensations.' For instance, at one place in the Examination he moved swiftly from speaking of 'a great number and variety of possibilities of sensation' to the statement that 'The whole set of sensations as possible, form a permanent background to any one or more of them that are, at a given moment, actual' (EH, p.181). Then shortly afterwards:

The permanent possibilities are common to us and to our fellow-creatures; the actual sensations are not. That which other people become aware of when, and on the same grounds, as I do, seems more real to me than that which they do not know of unless I tell them.

The world of Possible Sensations succeeding one another according to laws, is as much in other beings as it is in me; it has therefore an existence outside me; it is an External World (EH, p.182).

Such passages as these, though, are uncommon; Mill spoke continually of permanent possibilities of sensation, but only rarely of possible sensations, and hence it is reasonable to take seriously the prospect that he did not generally consider these as amounting to the same thing. <sup>7</sup>

The usual impression Mill gave of possibilities of sensation was that they have a valuable flavour of objectivity, of externality and of publicity about them, and it is likely that he felt that possible sensations do not (or at least, do not in an equal degree). In the Logic he talked of body as 'a set of sensations, or rather, of possibilities of sensation,' and his preference for the second disjunct is worth noting (SL, p.58). Then in the Examination he wrote that:

The conception I form of the world existing at any moment, comprises, along with the sensations I am feeling, a countless variety of possibilities of sensation ... These various possibilities are the important thing to me in the world. My present sensations are generally of little importance, and are moreover fugitive: the possibilities, on the contrary, are permanent, which is the character that mainly distinguishes our idea of Substance or Matter from our notion of sensation (EH, pp.179-80).

This may be just a way of saying that bodies cannot be identified with our actual sensations (something Mill explicitly maintained: 'our actual sensations and the permanent possibilities of sensation, stand out in obtrusive contrast to one another' (EH, pp.186-87)); but it may indicate a deeper distaste for identifying them with sets of sensations actual or possible.

Phenomenalism in its modern manifestations holds that sentences about physical objects can be translated into sentences about the sense-data we actually have, or would have if certain conditions were fulfilled. The phenomenalist claims that the sense-data sentences

offered as translations of physical object sentences are logically equivalent to the sentences they translate; and a common way of expressing the claims of phenomenalism is to say that, for the phenomenalist, physical objects are logical constructions out of sense-data. Phenomenalism is thus a reductive theory of physical objects. This is superficially similar to Mill's account:

I believe that Calcutta exists, though I do not perceive it, and that it would still exist if every percipient inhabitant were suddenly to leave the place, or be struck dead. But when I analyse the belief, all I find in it is, that were these events to take place, the Permanent Possibility of Sensation which I call Calcutta would still remain; that if I were suddenly transported to the banks of the Hoogly, I should still have the sensations which, if now present, would lead me to affirm that Calcutta exists here and now. We may infer, therefore, that both philosophers and the world at large, when they think of matter, conceive it really as a Permanent Possibility of Sensation (EH, p.184).

Like the modern phenomenalist, Mill placed great weight on subjunctive conditional analyses of the form: If a percipient were placed in such-and-such circumstances, then he would have so-and-so sensory experiences. Yet it cannot just be assumed that when Mill cited the availability of such conditionals in support of his claim that physical objects are permanent possibilities of sensation, he was defending just the same claim as is the phenomenalist who holds that physical objects are logical constructions out of sense-data. <sup>8</sup>

What is obscure about both Mill's theory and modern phenomenalism is the precise nature of their ontological commitments. Common sense has no doubt that physical objects remain in existence when no one is having sensory experiences of them. Berkeleyan idealism maintains the odd but at least forthright view that objects remain in existence when no finite subject is perceiving them, because God continues to perceive them. But it is hard to resist the impression that phenomenalism is merely evasive about the nature of objects, which no one is perceiving. Phenomenalists say that they do not want to deny that objects can exist unperceived, and claim that construing objects as logical constructions out of actual and possible sense-data enables them to sustain this position. Yet consider the following pair of sentences:

(A) There is a table in my bedroom

(B) If anyone were suitably situated in my bedroom, he would have certain sense-data as of my bedroom table. A phenomenalist might offer (B) as an analysis of (A) (or more strictly, he might offer it as a partial analysis, since the expression 'suitably situated in my bedroom' is itself open to phenomenalist reconstrual). Now an important question to pose is: Does (B) entail (A)? The answer to this is surely that it does not, for (B) is actually consistent with the negation of (A). Properly considered, (B) does not rule out that the world is such that objects come into existence when certain patterns of sense-data commence, and go out of it again when those patterns cease. But this is bad news for the phenomenalist, for it shows that the production of conditionals like (B) is inadequate to establish that phenomenalism really can accommodate the common sense belief in the persistence of unperceived objects: phenomenalist conditionals could be true yet physical objects still not exist unperceived. And it would not be acceptable for the phenomenalist to counter this criticism by noting that it would be a very odd kind of universe in which objects were brought into being by perception and went out of it when perception stopped. Certainly such a universe would be quite different from the universe posited by common sense; but the phenomenalist cannot help himself to common sense conceptions in rejecting it.<sup>9</sup>

Does this mean that phenomenalism really lacks the resources to provide any positive account of what it is for an object to exist unperceived? That depends on how bold an ontologist the phenomenalist is prepared to be. An option open to the determined phenomenalist is to accept a certain kind of realism about possible sensations, and to reify them in something like the way that some philosophers have wanted to reify possible worlds. For such a theorist, the table which no one is perceiving does continue in existence, but as a set of possible sensations which are, though non-actual, real. Not all phenomenals who have talked of possible sensations have intended to reify them in this manner; many would hold that the language of possible sensations is fully analysed by the production of conditionals of the style of (B). But on a strongly realist view of possible sensations, conditionals like (B) are true just because unperceived objects remain in being as sets of really existent possible sensations (which are available to be had - and thereby become actual sensations - by subjects who situate themselves suitably). Many philosophers will have no stomach for the reification of possible sensations, and will hold that if an unperceived table were no more than a set of such possible sensations, it would in any case be quite different from the kind of

object which common sense believes to persist when unperceived. But a phenomenalist who wants to reify possible sensations may claim support from the realism about possible worlds which has appealed to some philosophers, notably David Lewis (see, e.g., Lewis, pp.84-91). Lewis holds that we can talk about existence which is not actual existence; possible worlds, or 'ways things could have been,' exist, though not actually. Now if unactualised possibles which are possible worlds can exist, can they not, too, when they are possible sensations? However, most philosophers have had too robust a sense of reality to look kindly on the notion of unactualised but real possibles; and if that response should seem to have something of an air of prejudice about it, it can still very reasonably be said that if phenomenism is reduced to the strait of preferring such odd candidates for existence as reified possible sensations to common sense physical objects, it is a singularly unappealing doctrine.

Furthermore, it seems to be a non-contingent feature of actual sensations that they have subjects, and the strangeness of reified possible sensations appears greater still when we ask the question whose sensations they are. Some defenders of reified possible sensations might wish to say that these sensations are, unlike actual sensations, subjectless; but this point of analogy with actual sensations is abandoned only at the price of their becoming even more difficult to comprehend. Or it might be suggested that they can be ascribed actual subjects, that they can be mine or yours, in that they are the sensations which you or I would have in certain circumstances. But this seems wrong; what we would have in those circumstances would be actual sensations, and it is highly strained to say that we are now the subjects of reified possible sensations, which are alleged to exist yet without being actual. Alternatively, possible sensations could be ascribed possible subjects (likewise suitably reified), but this proposal leads us deep into a Quinean 'ontological slum' (a Quinean question would be: How many possible people are now having possible my-bedroom-table sensations?) (cf. Quine (1961), p.4). The wise philosopher will leave reified possible sensations well alone.

# V

Can possibilities of sensation fare better than possible sensations in a theory of the external world? More specifically, is it more



plausible to reify the former than the latter? If Mill's theory is to be more successful than standard phenomenism in analysing the nature of unperceived objects, it needs to be able to speak of reified possibilities of sensation. But how cogent is such talk?

Mill showed little hesitation in the Examination in speaking of possibilities of sensation as real, objectively existing things. The 'groups of possibilities,' he wrote, are 'the fundamental reality in Nature,' and 'though the sensations cease, the possibilities remain in existence; they are independent of our will, our presence, and everything which belongs to us.' Furthermore, they are 'common to us and to our fellow-creatures'; while 'the active force in Nature' is 'manifested in the modification of some of these by others' - such processes of modification being able, he stressed, to take place even when no one is in sensory contact with them (EH, pp.181-82). Occasionally Mill waxed quite lyrical about the permanent possibilities, though at some cost to precision, as when he wrote that:

the possibilities are conceived as standing to the actual sensations in the relation of a cause to its effect, or of canvas to the figures painted on it, or of a root to the trunk, leaves, and flowers, or of a substratum to that which is spread over it, or, in transcendental language, of Matter to Form (EH, p.181).

The purpose of this effusion was to reinforce the message that permanent possibilities of sensation are the basic stuff of reality, the prime existents, and that actual sensations are in some manner dependent on them or secondary to them (though precisely what this relationship was Mill appears never to have wholly decided).

Critics have not on the whole been very kind to Mill's possibilities of sensation. According to Geoffrey Warnock:

it [seems] inadequate to regard the actual table in my empty study as a possibility of sensation. For surely, when I say there is a table in my study, I am saying what actually is the case, not mentioning merely the possibility of anything (Warnock, p.227).

And John Hospers has complained:

That which is actually before me exists, but in what way can possibilities exist? The mountain that no one is perceiving exists ... but what at this moment exists, assuming that no one is perceiving the

mountain? A possibility? But what is that? Can a possibility-of-sense-data hold a tower on top of it, which we may see even if we don't see the mountain? Surely there is something wrong here. There is something that exists now, not just a mere possibility of something, whatever that may be (Hospers, pp.542-53).

These are natural criticisms, and it is clear that they take their origin from a common sense conception of reality which it is hard to deny. (However, Hospers is unreasonable in complaining that Mill is implying that a possibility of sense-data, or sensation, could support something of entirely different ontological status, namely a physical object such as a tower; for Mill, of course, physical objects are all to be analysed as possibilities of sensation.) It is unlikely that criticisms like these could be deflated unless some solid sense could be given to the thesis that possibilities of sensation can really exist in the absence of sensation - in other words, to a Mill-type reification of them. Mill's theory apparently makes an inadmissible switch of modalities, from actual objects to possibilities of sensation. Only if reification of permanent possibilities of sensation can be made plausible will this impression be countered. 10

Now we frequently do talk about possibilities as real. It would be silly to deny that there is a real possibility of death if one jumps from a plane without a parachute. The existence of a strong possibility that unemployment in Britain will remain high until the end of the century is denied by no major political party. And the anaesthetist monitors the sleeping patient's state carefully, because he knows that the possibility of pain (veritably a 'possibility of sensation') beneath the surgeon's knife is real. Moreover, it would not be stretching language too far to speak of physical objects as offering real possibilities of sensation, where one simply meant that they can be seen, felt, heard and so on. Mill's view that physical objects are possibilities of sensation is intended to have a more radical, reductionist slant than this; but our initial sense of the strangeness of possibilities of sensation may to some extent be mitigated when we reflect that (pace Hospers) we do sometimes feel it to be acceptable to speak of possibilities existing, or being real.

Furthermore, possibilities of sensation have two ostensible advantages over possible sensations as the fundamental posits of a metaphysical theory of the external world. The first is that no problem arises over the ownership of possibilities of sensation. There is no opening

for talk of a subject of possibilities of sensation, so there can be no embarrassment over the identification of their subject such as arose for the theory that physical objects are groups of possible sensations. But, secondly, as there is no temptation to say that possibilities of sensation must be owned, they are prima facie better candidates than possible sensations for being objective constituents of a common world. Actual sensations, having a subject, are subjective in nature; reified possible sensations, though it is hard to identify a subject for them, can make at most a dubious claim to objective status; but permanent possibilities of sensation (while they may have other problems) do indeed appear, as Mill said, to be 'common to us and to our fellow-creatures.' Now it is undoubtedly a great advantage of a theory of the external world that it is able to represent that world as being objective in nature; one of the problems of a theory like Berkeley's is that it is incapable of making proper sense of the objectivity of the world (strictly speaking, it is a consequence of Berkeley's view that there are as many worlds as there are subjects of 'ideas'). On the other hand, as we shall see later, Mill's philosophy faces the problem that representing the world as objective and common to different subjects is not at all obviously consistent with rigorous adherence to the principle of the relativity of knowledge.

Mill never intended to hold that all permanent possibilities of sensation can be identified with physical objects, though he held that all physical objects are identifiable with permanent possibilities of sensation. There is, for instance a permanent and not merely ephemeral possibility of getting a nasty shock if you feel about at the back of your television set with wet hands, but that possibility cannot intelligibly be identified with an object. Mill's view was that we form the concept of a physical object where the possibilities

have reference, not to single sensations, but to sensations joined together in groups. When we think of anything as a material substance, or body, we either have had, or we think that on some given supposition we should have, not some one sensation, but a great and even an indefinite number and variety of sensations, generally belonging to different senses, but so linked together, that the presence of one announces the possible presence at the very same instant of any or all of the rest (EH, p.180).

This, though vague, is promising. It is a reasonable supposition that only certain kinds of groups, or complexes, of individual possibilities

of sensation constitute the possibilities of sensation which could at all plausibly be identified with objects. But which groupings might we be inclined to think of as objects? Like other philosophers before and since, Mill considered that sensations which correspond to the primary qualities of things, that is, sensations of resistance, extension and shape, are peculiarly important for our belief that we are confronted with a world of external objects. He did not believe these to be necessary for the formation of the idea of matter ('I am disposed to believe.... that any of our senses, or at all events any combination of more than one sense, would have been sufficient to give us some idea of Matter' (EH, p.213)); but he did allow that:

The Permanent Possibilities of sensations of touch and the muscles, form a group within the group - a sort of inner nucleus, conceived as more fundamental than the rest, on which all the other possibilities of sensation included in the group seem to depend (ibid.).

Bain thought this part of Mill's account on the right lines, but 'too short for the theme.' What he should have done, suggested Bain, was to make more of 'the contrast of active energy and passive feeling as an important constituent of the subject and object distinction,' instead of relying on an undifferentiated notion of resistance (Bain (1882), pp.120-21). This is fair criticism, and though it may be said that Mill was less interested than Bain was in the construction of detailed psychological theories, his sketchiness in the present instance carries over into a weakness in his metaphysical account of what objects are.

A common sense view of the world may happily accept the proposition that physical objects provide complex possibilities of sensation; though it will stress that these possibilities exist only because objects have qualities which enable them to be touched, seen, smelt, and so on. But Mill's theory maintains that objects are real possibilities of sensation and no more than that; and common sense will object that there cannot exist bare possibilities of sensation without a basis in the tangible, visible, olfactible, and other qualities of things. However, in the appendix added to the 1867 edition of the Examination, Mill made an intriguing supplementary proposal about the nature of object-constituting possibilities of sensation: a body, as a group of possibilities of sensation, is, he said, 'a power of exciting sensations' (EH, p.201). Unfortunately, he did not elaborate on this suggestion, either in the Examination or elsewhere. Yet it does hint at a strategy for construing

reified possibilities of sensation which is worth some attention. Perhaps what Mill was gesturing vaguely towards was a variety of dispositional analysis of objects.

To say of a glass bottle that it is fragile is to ascribe to it a disposition to shatter in certain specifiable circumstances; its dispositional quality of fragility can be characterised by means of such subjunctive conditionals as, 'If it were hit with a heavy hammer, it would (probably) shatter.' A way in which one might redescribe the bottle's fragility is to say that it has associated with it a permanent possibility of shattering (under certain conditions). Fragility is uncontroversially a disposition, but many other qualities of things can also be regarded as dispositional without stretching that notion unduly. Take, for instance, a physical object's tangibility: ascribing this quality to it can be explained by saying that were we to bring parts of our bodies in contact with it, it would provide us with sensations of a tactile sort. And just as we might say that a bottle has associated with it a permanent possibility of shattering, we might say that it has associated with it too a permanent possibility of providing tactile sensations. An object's other sensible qualities can likewise be construed dispositionally, and described in terms of associated permanent possibilities of providing sensations of various kinds.

To say that a body is a 'power of exciting sensations' may thus seem an acceptable, if unusual, way of referring to certain of its dispositional qualities. But for Mill, of course, this form of words conveyed a radically reductionist theory of matter. In his view, a physical object was not a power of exciting sensations in virtue of having other qualities which provided a basis or ground for its sensible qualities, but was to be identified with a set of sensible qualities construed dispositionally. Bodies do not just have the power to affect our senses, on this account; rather, they are that power and nothing more. One might be reminded here of Locke's view of secondary qualities, 'which in truth are nothing in the objects themselves but powers to produce various sensations in us' (Locke, vol.1, p.104). But Locke believed that the secondary qualities of objects arise from the 'original or primary qualities of body,' namely solidity, extension, figure and mobility; and he held that it is only on the basis of the existence of these primary qualities that objects affect our senses (ibid.). Unlike Locke, Mill thought that even the primary qualities of bodies are powers to produce sensations, and not a non-dispositional basis of dispositional qualities.

Common sense will find this divergence from Locke the fundamentally

objectionable feature of Mill's concept of objects. It is very natural to think that dispositional qualities cannot exist by themselves, but must be founded on something non-dispositional. One might put this natural view by saying that where this is a disposition, something must be disposed. Locke's secondary qualities are powers which things have by virtue of their primary qualities; and indeed it is plausible to hold that a disposition presupposes not just that there is something disposed, but also that the thing disposed is disposed in virtue of its possessing a quality or qualities forming an appropriate causal basis for the disposition. Thus a bottle's fragility, for instance, is a dispositional quality of the bottle, and it is causally grounded in its physical microstructural qualities. But Mill's view appears to be that there can exist bare powers to cause sensations which lack both possessors and causal grounds. This is not, on the face of it, an attractive doctrine; and it is barely clear that it makes any sense at all (a claim which Hartry Field has recently supported, though without reference to Mill).<sup>11</sup> Mill's picture seems to be that subjects who at some time are suitably spatially related to a particular location will then experience certain sensations, because there is at that place then a power to produce such sensations; yet there is nothing else there besides the bare causal power itself, and this is seriously out of line with our normal understanding of powers as grounded in other (non-dispositional) qualities of objects.

There is, however, a conceivable move which Mill could make at this point to put his theory in a better light. To the objection that he has posited dispositions without foundations, he could reply that it is spatial locations which, though immaterial, are the possessors of dispositions to produce sensations. As a subject moves around space, this line of thought would run, his presence serves to provoke different locations to manifest the dispositions they possess to excite sensations. In this way, space is the groundwork or basis of possibilities of sensation, conceived as powers to cause sensations, and the possibilities lose their uncomfortable appearance of being ontologically free-floating. Moreover, if space is objective and common to different subjects of experience, it becomes easy to see why permanent possibilities of sensation have that status too: it is precisely because they are powers of objective and common locations in space. To be sure, Mill himself never developed his theory along the present lines. Yet it is tempting to see this extension as offering a promising underpinning of many of the things he did say. We can now see just why it should be that:

We find other people grounding their expectations and conduct upon the same permanent possibilities on which we ground ours. But we do not find them experiencing the same actual sensations. Other people do not have our sensations exactly when and as we have them: but they have our possibilities of sensation ... The permanent possibilities are common to us and to our fellow-creatures; the actual sensations are not (EH, p.182).

And it now becomes more reasonable to hold that:

Our sensations we carry with us wherever we go, and they never exist where we are not; but when we change our place we do not carry away with us the Permanent Possibilities of Sensation: they remain until we return, or arise and cease under conditions with which our presence has in general nothing to do (EH, p.186).

But such a view of the nature of objects is nevertheless very problematic. One counter-intuitive consequence of it (though conceivably one which Mill might have been happy to live with) is that our normal criteria for the identification and reidentification of objects are merely fictitious, and quite out of accord with reality. For where we would naturally speak of an object moving through space without loss of its numerical identity, the present theory can accommodate only the notion of a pattern of qualitatively similar sensations to be obtained through a sequence of adjacent spatial locations; nothing in what is experienced actually preserves numerical identity while moving through space, though regularity in the sequence of experiences leads us to ascribe a fictitious identity (somewhat similarly to the way in which in response to seeing a rapid successive illumination of single bulbs in a series of bulbs, as in some advertising displays, we naturally speak of a 'moving dot' of light).<sup>12</sup>

There remains, too, a fundamental unclarity about how bare spatial locations can support powers to cause sensations. There seems to be no answer to the question of what it is in virtue of that spatial locations possess such dispositions; and it is thoroughly obscure how two different spatial locations should possess different causal powers, or why a single location should possess different powers at different times. Merely asserting that spatial locations are available to play the role of bearers of dispositions to cause sensations is not good enough in the absence of any explanation of what qualifies them to do this. It seems reasonable to insist that dispositions can only coherently

be ascribed to things which have other qualities which provide a suitable causal ground for the dispositions in question. But it is impossible to see how spatial locations, merely qua spatial locations, can have any qualities which are able to support powers to cause sensations.

Now Mill himself did not put forward the view that permanent possibilities are dispositional powers of spatial locations; in fact, he did not even believe in the objectivity of space. His philosophy of space and time is one of the less rewarding areas of his thought, being very sketchy and obscure, but his refusal to admit that space and time exist objectively is clear enough. He admitted that time is a condition of experience, without which it would be impossible to recognise an order within our sensations, yet he denied the 'reality of Time,' insisting that 'an entity called Time ... regarded as not a succession of successions, but as something in which the successions take place, I do not and need not postulate' (EH, p.199).<sup>13</sup> Having quickly summed up time as 'an indefinite succession of successions, unequal in rapidity' (ibid.), Mill very oddly defined space in terms of time, holding that 'the idea of Space is, at bottom, one of time' (EH, p.223). The theory here is that ideas of space are 'constructed by the mind's laws out of the notion of length in time'; according to Mill, we derive the concept of spatial extension through the sensation of muscular motion involved in, for instance, passing our hand between two objects: the greater the length of time the muscular motion takes, the greater the distance we conceive there to be between the objects (EH, p.222, and Ch.XII passim). This is exceedingly questionable as psychology, though that is not our present concern. What matters here is that Mill's subordination of the idea of space to that of time, coupled with his refusal to allow time an objective status, led him to deny objective status to space too: 'we have no reason for believing that Space or Extension in itself,' he concluded, 'is anything different from that which we recognise it by' - that is to say, certain sensations of the muscles (EH, p.222).

Clearly Mill could not have held that objective spatial locations were the seats of causal dispositions to produce sensations if he did not believe in the objectivity of space. Yet his denial of the objectivity of space greatly hampers a view which he, definitely did wish to support, namely, that permanent possibilities of sensation are common to different subjects of experience. He often reiterated the claim that while actual sensations are private to individuals, possibilities of sensation have a public status. But it is extremely hard to accord any content to the notion that possibilities of sensation are common



to different subjects if no reference is allowed to their situation in an objective, common space. In the 1867 edition of the Examination Mill added a note containing the admission that the 'real externality' of permanent possibilities was strictly incapable of proof, but he ventured the suggestion that

the Permanent Possibilities are external to us in the only sense we need care about; they are not constructed by the mind itself, but merely recognised by it; in Kantian language, they are given to us, and to other beings in common with us (EH, p.187).

Whatever else the importation of what Kant termed 'empirical realism' can do for Mill's theory, it cannot justify the last eight words of this statement - it cannot, that is, vindicate the contention that permanent possibilities are truly public entities. A combination of Kant's empirical realism and Mill's theory of permanent possibilities does not disallow that different subjects may have 'given' to them qualitatively similar but numerically distinct permanent possibilities; but as Mill was fully aware of the distinction between qualitative similarity and numerical identity of sensations, he should have been sensitive to the difference between subjects' experiencing numerically identical permanent possibilities and their experiencing merely qualitatively similar ones. Different subjects might experience qualitatively similar permanent possibilities in their own private spaces, but a public space is required for them to experience numerically the same ones.

Should Mill, then, have been willing to acknowledge the objectivity of space? In trying to answer this question, we should become more clearly aware of what we might already have suspected, that there is a profound ambiguity of intention about his theory of the external world. Sometimes the target of his criticism is the realist doctrine of the external world, with its underpinning doctrine of objective space and time; at these moments, Mill is arguing for a variety of idealism. But at other times his target appears rather to be the realist notion of matter, and his theory of permanent possibilities of sensation seems to play the role of showing that an objective and public world need not be a world of material objects as the realist conceives them; and here we might describe Mill as arguing for a version of immaterialism. The logical relationship between these views is that Mill's idealism entails his immaterialism, but the converse entailment does not hold. The important similarity between the two positions is that neither countenances the realist notion of matter; the critical differ-

ence is that only the idealism is committed to denying the real externality of a world outside the mind. It is not common for philosophers to distinguish between these two positions, yet it is clear that they make importantly different claims - claims with, in fact, a world of difference between them.<sup>14</sup> Now when it is immaterialism rather than idealism that is Mill's concern, it would serve him very well to admit the objectivity of space and time; and indeed, if he does not do so, then it is very dubious whether he can accommodate the notion of permanent possibilities of sensation as common to different subjects of experience. It is interesting that although he never actually said that space is objective, he often talked as if he believed this when it was the case for immaterialism which he was presenting (as, for instance, when he spoke of permanent possibilities remaining put when the subject changes his place, and of their being available to other subjects even after he has died (EH, p.186)).

Mill's immaterialist position is thus a half-way house to his more radical idealism. It represents, moreover, a more limited employment of the principle of the relativity of knowledge. Construed as maintaining the reducibility of bodies and their attributes to sensations, the relativity principle is compatible with an immaterialist philosophy which yet continues to affirm the existence of an objective spatio-temporal framework external to the mind. But understood more broadly as insisting upon the total elimination of the extra-phenomenal in favour of the phenomenal, the relativity principle is a charter for idealism. An objective spatial matrix, containing within it causal powers to produce sensations in suitably placed subjects, hardly seems to differ essentially from a common sense realist world of physical objects in respect of being no merely phenomenal affair; both are truly external to the mind in a fully realist sense of 'external.' Yet if our only source of knowledge is sensation, and if sensation informs us solely about phenomenal appearance, as Mill claimed, then even to affirm the existence of an objective spatial matrix is to affirm something of a recognition-transcendent kind - which was presumably Mill's point when he said that the 'real externality to us' of permanent possibilities is incapable of proof. To say that permanent possibilities of sensation are objective causal powers common to all subjects of experience (whether or not one adds that they are dispositions of spatial locations) is to say what cannot, on Mill's presuppositions, be established by sensational means. In its most forthright form, the relativity principle prohibits all inference from subjective experience to objective reality, and it is indifferent whether reality is taken to consist of common

sense physical bodies or reified possibilities of sensation in the shape of causal powers to produce sensations.

But could Mill not have opted to accept the relativity principle in the weaker form which, calling merely for the reducibility of bodies and their attributes to sensations, is compatible with the postulation of a common external space? This suggestion meets trouble because it is not clear why someone inclined to find the basic thrust of the relativity doctrine persuasive should wish to limit its application to knowledge about bodies and their attributes only, while accepting certain recognition-transcendent claims about the nature of space. If knowledge is limited to the phenomenal given, as the relativity doctrine at its boldest and at the same time most straightforward holds, it is to make a recognition-transcendent, and thus illicit, claim to posit any kind of objective but unsensed entities. Mill therefore, though he was unaware of it, properly faced a dilemma: he should either have abandoned relativity (or attempted the uninviting task of showing why it should only be accepted in regard to knowledge of bodies and their attributes), or he should have accepted a thoroughgoing idealism which rejects a common objective space, and drops the common sense belief that objects stay in existence when no one is perceiving them.

## VI

At least one of Mill's early critics realised that his metaphysical theory of the external world had an ambiguity of purpose about it. Francis O'Hanlon, whom Mill quoted in order to refute in his 1867 appendix to the Examination, pointed out that a truly idealist theory of the world, such as Mill had at first seemed to be putting forward, had no business talking about modifications taking place in permanent possibilities of sensation 'whether we are asleep or awake, present or absent' (EH, p.203). Mill rather patronisingly praised 'my young antagonist' for the acuteness of his criticism, yet wholly failed to grasp, what O'Hanlon had apprehended, that his theory was not a consistent one, but rather a confused mixture of idealist and immaterialist elements.

O'Hanlon saw, rather better than Mill did, that a professed Berkeleyan should leave no room for non-mental principles as laws of phenomena; for if reality is mental in nature, its laws should be mental too. Yet Mill, though calling himself a Berkeleyan, was happy to admit the existence of lawlike interactions between permanent possibilities of

sensation which were outside and independent of any minds, and thus by implication the existence of laws which were not laws of mind. That an idealist philosophy should regard laws of mind as the only laws of reality was naturally assumed by James M'Cosh, another of the Examination's early critics, who complained that it was implausible to maintain - as he supposed Mill to be doing - that the laws of association of ideas are the sole governing principles of things. He objected to Mill's theory that:

there is a palpable omission here, for it omits those powers by which one body operates upon another; thus the sun has a power to make wax white, and fire to make lead fluid (M'Cosh, p.118; quoted at EH, p.201).

In a similar vein, W.H. Smith asserted that 'The qualities by which they [things] act upon each other, cannot be resolved into any receptivity or subjectivity of mine' (quoted at EH, ibid.). In the appendix of 1867, Mill replied very scornfully to these critics that they would not have said what they did had they 'entered even a very little way into the mode of thought' which they were attacking (ibid.). But this was hardly fair. It is true that Mill had never explicitly claimed that the laws of association were the sole laws of reality, but as he had classed himself as a follower of Berkeley and condemned as naive the common sense realist view of the external world, it was scarcely unreasonable for M'Cosh and Smith to infer that he rejected the existence of any mind-independent laws. In his reply to them, however, Mill made it quite clear that permanent possibilities of sensation were objective existents capable of exerting causal influences on each other even when they were not producing sensations in any subject. He thus rejected M'Cosh's claim that his theory was flawed by a 'palpable omission' to recognise that bodies interact in ways not determined by the laws of association (or any other mental principles). But what he did not say about his theory so construed was that it was no longer idealist in character but rather immaterialist; and he did not say that because he was himself unaware that he had changed his ground.

Mill's shift from idealism to immaterialism also has implications for the role of associationism in the psychological theory of the origin of the belief in an external world, though once again Mill seems to have been oblivious to the fact, or very nearly so. Association was initially introduced by him to explain why we form the idea of 'Contingent Sensations' which we would obtain in appropriate situations which we are not actually occupying. It is our ability to form such an idea,

Mill thought, which is chiefly responsible for our coming to believe in a reality beyond the mind. But he also suggested, with considerable plausibility, that the notion of an external world is the notion of a reality which is 'not constructed by the mind itself, but merely recognised by it,' or, in Kantian phrase, 'given to us' (EH, p.187); and his original view was that the laws of association were instrumental in producing a belief in the existence of an external world which is not a mere product of mind. But if permanent possibilities of sensation are truly objective and external existents of the sort envisaged by Mill's immaterialist theory, it ceases to be clear why the laws of association should be needed at all in setting up the belief in an external world; for one's experience of a world of causally interacting permanent possibilities of an objective character should be quite sufficient in itself to produce a conviction that what one is encountering is a world in which things happen quite independently of one's mind, or, in other words, a world which is given to, and not made by, us. Associationism would appear, then, to have a greater role to play in a psychological theory of the origin of belief in an external world where an idealist metaphysical theory of the nature of that world is preferred to an immaterialist one.

Is this perhaps the reason why associationism is no longer in evidence in the 1867 appendix restatement of Mill's views? Had the appeal of an immaterialist metaphysic, apparently greater in 1867 than in 1865, led Mill to discard his earlier thoughts on the role of association? It seems unlikely. After all, he was quite happy to reprint Chapter XI with its associationist doctrines intact as an appendix to his 1869 edition of James Mill's Analysis, and it is improbable that he would have done this if he had come to believe that those doctrines were incorrect. It is more probable, as was suggested in section 2, that Mill's interest in providing a psychological theory of the belief in an external world (as distinct from a metaphysical analysis of the nature of external reality) was not very considerable, and that he was much less committed to proving that the laws of association played a crucial role in producing the belief in question than he was to showing that psychological explanations of it were in principle possible which did not presuppose the truth of a common sense realist conception of the world. That being so, it seems right to conclude that Mill had no intention to change his mind about the significance of associationism in his psychological theory once he had become well disposed to an immaterialist view of permanent possibilities. The fact is that both his metaphysical and his psychological theories have an ambiguity of intention about

them of which he never displayed any recognition.

## VII

Chapter XII of the Examination bears the somewhat curious title: 'The Psychological Theory of the Belief in Matter, How Far Applicable to Mind.' Like its predecessor, it contains discussions of both psychological and metaphysical issues, but it is very brief, and its arguments are, with one exception, rather sketchy. The exception is the analogical argument for the existence of other minds, which was powerfully stated by Mill, and is happily detachable from the other arguments of the chapter (EH, pp.190-92). Of present concern to us, however, is the central metaphysical thesis of the chapter that mind, equally with matter, is explicable as a permanent possibility of sensation.

Mill's theory of the mind was explicitly grounded on the principle of the relativity of human knowledge: 'It is evident, in the first place,' he began, 'that our knowledge of mind, like that of matter, is entirely relative' (EH, p.188). So just as the relativity doctrine obliges us to reject any recognition-transcendent conception of matter, it compels us, too, to deny that mind is any kind of unknowable, mysterious substance causally or otherwise supporting a succession of conscious states. Accordingly Mill adopted a form of 'bundle theory' of the mind - or of the Self or Ego, as he alternatively and without distinction called whatever is the subject of mental states:

We have no conception of Mind itself, as distinguished from its conscious manifestations. We neither know nor can imagine it, except as represented by the succession of manifold feelings which metaphysicians call by the name of States or Modifications of Mind (EH, p.189).<sup>15</sup>

But for all that, he continued, an adequate account of the mind needs to acknowledge that we think of minds as retaining their identity over time, as if there were an underlying mental substratum which was the mind itself and the real subject of mental states; we naturally believe in 'a something which we figure as remaining the same, while the particular feelings through which it reveals its existence, change' (ibid.). We even believe that this something persists through passages of dreamless sleep, when there is no feeling or thinking going on at all. But how, consistently with the relativity of knowledge, can such a notion be accommodated? Mill suggested that what we should say about

the mind or self during dreamless sleep is that:

my capability of feeling is not, in that interval, permanently destroyed, [but] is suspended only because it does not meet with the combination of conditions which would call it into action: the moment it did meet with that combination it would revive, and remains, therefore, a Permanent Possibility (ibid.).

And that issue clarified, there was now no apparent hindrance, Mill proposed, to characterising the mind or self as:

nothing but the series of our sensations (to which must now be added our internal feelings), as they actually occur, with the addition of infinite possibilities of feeling requiring for their actual realization conditions which may or may not take place, but which as possibilities are always in existence, and many of them present (ibid.).

In fact, Mill did not adhere with complete consistency to this account of mind, sometimes in Chapter XII speaking of it as nothing but a permanent possibility, rather than as a combination of actual sensations and a possibility - or possibilities - of sensation (e.g. 'The Permanent Possibility of feeling, which forms my notion of Myself' (ibid.); 'neither Mind nor Matter is anything but a permanent possibility of feeling' (EH, p.191).)

A theory which treats mind as wholly or partially definable in terms of possibilities of sensation faces some very considerable problems. One particularly thorny difficulty for Mill is that as he also wanted to explain physical objects as being really nothing more than possibilities of sensation, it is unclear how he could distinguish physical objects from minds. Alan Ryan has written that it was very natural for Mill, after having construed matter as 'a permanent possibility of being sensed,' to go on to characterise mind in a similar fashion as 'the permanent possibility of having sensations' (Ryan (1979), p.xlvii). But this makes it sound as if Mill recognised two varieties of permanent possibilities - possibilities of being sensed, and of having sensations -, and that is something he never did. Moreover, he would have rejected the notion of a possibility of having sensations as being comprehensible only on a model which construes the mind as a substratum not to be identified with the sensations which belong to it. A 'possibility of having sensations' can only be understood as a possibility of something's having sensations, and even though committing

oneself to the existence of such possibilities would not necessarily involve committing oneself to the notion of real mental substrata existing during periods of dreamless sleep, it would still involve acceptance of the possibility of such substrata to have sensations in those periods. But for Mill, minds are quite incorrectly conceived on a model of substrata plus mental states which belong to or inhere in them, and he could not have meant to consider them, as Ryan suggested, as possibilities of having sensations.

Yet if both bodies and minds are, as Mill held, composed wholly or partly of permanent possibilities of sensation, it becomes unclear what the difference is between them, and indeed obscure how there can be any significant content to the distinction between subjective and objective which is so fundamental a part of our normal conceptual scheme. In a paragraph found only in the first two editions of the Examination, and deleted later without replacement, (as if he had given up in the face of an insuperable difficulty), Mill proposed that whereas those possibilities of sensation which are external objects form 'small' and 'perfectly definite' parts of the series of possibilities which I might experience under certain conditions, my notion of myself includes 'all possibilities of sensation, definite or indefinite, ... which I may imagine inserted in the series of my actual and conscious states' (EH, p.189). But this, as Mill apparently came to realise, is perfectly hopeless. I do, as a matter of fact, recognise certain 'actual and conscious states' as my own; and I also recognise that there are experiences which I have not had but might have done. Now to identify myself with the series of 'actual and conscious states' I regard as my own, as simpler forms of bundle theories would enjoin me to do, may be to make a mistake about my self-identity, but it is hardly to make an egregious one; views of the mind as a bundle of actual sensations may be ultimately untenable, but they are not transparently false. But it seems strikingly less plausible to suppose that my self consists not just of such actual sensations, but in addition of the indefinitely large and perhaps infinite number of experiences which would be possible experiences for me to have, though in fact I do not have them. For instance, I may never visit Australia, and if I never do, then I shall never have the visual and other sensations that I would have if I were to ascend Ayers Rock. On Mill's view, however, my self partly consists in the possibility of those sensations of Ayers Rock. But, mirabile dictu, that view becomes even more stunningly implausible when we reflect on the nature which Mill ascribed to permanent possibilities of sensation. They are, for one thing, public in status, 'common



to ourselves and other beings' (EH, p.202), which means that my self cannot be wholly constituted out of components unique to me (for while my actual sensations are mine alone, the possibilities of sensation of which I am also composed are not). Moreover, in so far as the same public possibilities which are part of me are part of you also, it seems that to that extent we are literally identical! Nor does Mill's talk of external objects being composed of 'small' or 'definite' groups of possibilities, while selves contain 'definite or indefinite' possibilities, help matters; if this vague language could capture anything, it would be the difference between, on the one hand, such 'small and definite' objects as tables, and, on the other, such complex objects as towns or such fuzzy ones as sunsets.

It is only a very superficial improvement when Mill adds that selves, unlike external objects, are composed of possibilities of 'thoughts, emotions, and volitions' as well as of possibilities of sensation (EH, p.189). This acknowledges the complexity of human mental life, but achieves little more. For one thing, it is not clear that external objects could not be regarded as possibilities of thoughts or emotions or volitions with as much (or as little) plausibility as they can be regarded as possibilities of sensation; thus one might speak, in an extended Millian vein, of objects as possibilities of those mental states which, in more standard parlance, one might talk of their causing in people - of £5 notes as possibilities of pleasure, or of guns as possibilities of grief, for example. But, further, it seems just as incredible that I should be partly composed of the possibility of a sense of awe before the massive bulk of Ayers Rock as that I should be partly composed of the possibility of certain visual sensations of it. And if selves include not merely myriads of possibilities of sensation but also myriads of possibilities of other mental states, they are even more flabby and indistinct entities than they appeared to be on Mill's first idea of them.

Apart from the special difficulty about the distinction of selves which Mill's theory meets because of the public status he ascribed to possibilities of sensation, it encounters the general problem of bundle theories about how to determine the boundaries between selves. If there is no real substratum to link my mental states together as mine, then it looks as if the unity of my self is either arbitrary or fictitious (which latter idea Hume held),<sup>16</sup> in which case the boundary between myself and others could be drawn elsewhere without violence to the facts. But the faculty of self-consciousness which we all possess makes it impossible to accept that the boundary between ourselves and others

could have been equally well drawn in another place; I cannot believe that those states I ascribe to myself could with just as much correctness be alternatively ascribed to some different subject; I recognise my mental states not just as instances of perceptions, satisfactions, pains, and so on, but as my perceptions, satisfactions, pains, etc. Now Mill was aware that his theory faced a weighty difficulty arising from the fact of self-consciousness, and considered it to surface in a specially sharp way in connection with memory and expectation:

The thread of consciousness which composes the mind's phaenomenal life, consists not only of present sensations, but likewise, in part, of memories and expectations. Now what are these? In themselves, they are present feelings ... But they are attended with the peculiarity, that each of them involves a belief in more than its own present existence. ... Nor can the phaenomena involved in these two states of consciousness be adequately expressed, without saying that the belief they include is, that I myself formerly had, or that I myself, and no other, shall hereafter have, the sensations remembered or expected (EH, pp.193-94).

Consequently, Mill concluded, we must either accept 'the paradox, that something which ... is but a series of feelings, can be aware of itself as a series,' or concede that 'the Mind, or Ego' is, after all, 'something different from any series of feelings, or possibilities of them' (EH, p.194). Oddly enough, he declined to pursue the matter further, and having destabilised his own theory of the mind, he complacently ended by declaring that 'we are here face to face with that final inexplicability, at which, as Sir W. Hamilton observes, we inevitably arrive when we reach ultimate facts' (ibid.). In his 1867 appendix, he returned very briefly to the theme of mind, reiterated the need to recognise the existence of a sense of self (even though this is apparently in breach of the relativity principle), and raised the 'Kantian' possibility that the self is not a real something of which we are conscious, but only what we are 'compelled to assume ... as a necessary condition of Memory' (EH, pp.207-08). Unsurprisingly, Mill's treatment of the mind has not been among the most praised of his philosophical discussions, and perhaps has satisfied no one except Bain, who confessed himself unable to grasp what the difficulty over memory and expectation was (Bain (1882), pp.121-22).

Mill may not have realised that his problem about memory and expectation is just an aspect, or a special case, of a general problem about

self-awareness. Memories and expectations which concern past or future states of myself raise a specific puzzle about the nature of the temporal continuity of the self.<sup>17</sup> But many other mental states have a content which includes a sense of self; feelings of pride, jealousy, remorse, ambition and many others have an essential reference to one-self, and could not be had by a subject who - if this were possible - lacked a sense of his own identity. Such mental states have an element of internal direction on the self, yet even mental states without that direction are experienced not as isolated and unconnected, but as forming part of the history of a continuing self. If I see a tree, or hear a bird sing, or think of Napoleon, the content of my states has no reference to myself, but I am nevertheless aware of them as my states. If I were asked whose was the sighting of the tree, or the hearing of the bird, or the thinking about Napoleon, I would without hesitation reply my own, and I would do that not on the basis of any evidence that they could be ascribed to me, but simply because I had experienced them as my states. The nature of self-consciousness in all these cases, and not just in those of memory and expectation, calls for elucidation.

Bertrand Russell, whose penchant for reductive metaphysics was highly reminiscent of Mill's, submitted reluctantly to the view that we are probably aware of 'bare selves' which are distinct from our particular thoughts and feelings (Russell (1911), pp.27-28). Mill too felt forced to acknowledge this to be probable, though he did not entirely relinquish hope that the mind might yet be established to be a self-aware bundle of mental states and their possibilities. Is there in fact any promise in the idea that self-awareness could be explained in terms of a series of feelings (leaving aside for now possibilities of feelings) being aware of itself? Philosophers have often dismissed the notion of a reflexively-aware series of feelings as transparently nonsensical (Mill himself thought it was 'paradoxical'), but Don Garrett has recently argued that there is less of a difficulty here than is usually thought. 'For a perception to become itself an object of thought,' he suggests, 'is for an idea of it to occur,' and his claim is that for a bundle of feelings to become aware of itself, all that is required is that an idea of the bundle should be incorporated into it (Garrett, pp.343-44n). Now could Mill have adopted this account of self-awareness, and so explained his 'final inexplicability'?

It is very dubious whether he could. There is surely more to self-awareness than is captured in the notion of a bundle of feelings (or other mental states) containing an idea of itself. One problem is that it fails to explain the kind of self-awareness involved in those mental

states like jealousy or pride which have an intrinsic reference to the self. Furthermore, an idea of a bundle of mental states, even if it collects together all and only the mental states which as a matter of fact belong to oneself (and it is hard to believe that one could actually frame such an idea), would still seem to lack the extra content provided in the thought that all those states are one's own. This problem is not removed even if the following modification is made to Garrett's proposal to render it more plausible. One could frame the idea of the bundle of mental states (which need not now be each separately represented in the idea) which are associated with a particular body, say Smith's, in the sense of being those states which one would naturally ascribe to Smith on the basis of the behaviour exhibited by that body. For Smith to have self-awareness, it might then be suggested, is for him first of all to have that idea, and next to be able to recognise which mental states fall under it. (It might be added that Smith will have a sharp concept of his own self-identity, because he has the idea of a bundle of mental states distinguished from all others by the very clear-cut criterion that they are all associated, in the appropriate ways, with a certain body).

But this is still inadequate. In thinking of the bundle of states associated with Smith's body, and in being able to identify mental states as belonging to that bundle, Smith is not in any position which others could not in principle occupy - though they could not have the idea of those states as their own. Yet Smith, too, on the theory, is said to have the idea of those states as his own only by virtue of recognising them as members of the bundle of states associated with a particular body. But this is not very plausible; after all, I can have the idea of the mental states associated with Smith's body, and recognise particular states of anger, or jealousy or pleasure as being among them, but this does not give me Smith's self-awareness. How, therefore, should Smith's having the same idea and making the same recognitions constitute him self-aware? It might be objected that we should really describe what happens in Smith's case in terms of his forming an idea of the bundle of mental states associated with his own body (that is, with a body he recognises first-personally as his own, rather than third-personally as Smith's). But this is unacceptable on two counts. First, it illicitly presupposes that Smith already has self-awareness (this is required for him to be able to take up a first-personal perspective on the body in question, and regard it as his own), whereas the purpose of the theory was to explain self-awareness in terms of the possession of a certain idea which, if petitio is to be avoided, clearly must not already

involve that awareness. But secondly, even if that objection is waived, it still appears untrue to the psychological facts to suggest that one's sense of oneself as a unitary and persisting subject of experiences is derived from one's sense of oneself as the possessor of a body. There is an often noticed difference between my ascription of mental states to myself and to others: while I might ascribe anger to John because I see the rapid workings of his face and his clenched fists, when I feel anger I am aware of it without having to seek the evidence of my physical behaviour. It is highly plausible to suppose that my primitive command of a sense of myself as a subject of experiences is likewise independent of any reference to my body; just as I can ascribe anger to myself without having to consult my behaviour, so too can I ascribe myself a mental identity without needing to think of myself as the possessor of a particular body.

Given the difficulties facing bundle theories of the self, Mill can hardly be blamed for doing as other writers have done, and acknowledging the possibility that minds or selves are substances which are irreducible to their states. F.H. Bradley scoffed at Mill for calling mind a 'final inexplicability' (Bradley (1924), p.40n), but it might be fairer to praise him for his candour in admitting the severe problems involved in producing a satisfactory account of the subject of experience and of the nature of self-awareness. Russell is not the only later writer to have conceded that what we are aware of in self-consciousness may be a 'pure' self, which is a simple and irreducible bearer of mental states. A recent influential writer on the mind, Colin McGinn, has suggested that:

Short of a direct demonstration of incoherence in the naive conception of the self, we therefore seem entitled - or perhaps driven - to the conclusion that the self should be conceived as a simple mental substance whose identity over time is primitive and irreducible (McGinn, p.122).

This is essentially Mill's conclusion of eighty years earlier. Yet it deserves repeating that such a conclusion sits uneasily with his acceptance of the relativity of knowledge, which leaves no room for what is not reducible to the sensations which alone are accessible to our epistemic faculties. Mill refused to admit the existence of a tension when he touched on this issue at the end of his 1867 appendix to the Examination, but it is hard to resist the impression that the refusal was no more than an act of politic bluff.<sup>18</sup>

## N I N E

### M I L L ' S     I N C O N S I S T E N T     E M P I R I C I S M

#### I

Philosophy, for Mill, was a Manichean struggle between two opposed schools of thought, that of a priorists who believe it to be possible 'by direct intuition, to perceive things, and recognise truths, not cognizable by our senses,' and that of the empiricist followers of Locke, who maintain that, 'Of nature, or anything whatever external to ourselves, we know ... nothing, except the facts which present themselves to our senses, and such other facts as may, by analogy, be inferred from these' (CO, p.125). Between these conflicting parties, Mill reported, 'there reigns a bellum internecinum,' one side accusing its opponents of being 'beasts,' while the other condemns its rivals as 'lunatics' (CO, p.126). His own allegiance to the 'school of experience' was unwavering, and he believed that whatever shortcomings were to be found in the writings of Locke, Hartley, Bentham and other of its influential protagonists could be removed without any fundamental deviation from the spirit of their doctrines. In 1840, when Mill published his essay on Coleridge, the position of the experience school, or empiricists as we would call them, was, in his view, an embattled one, 'Coleridge, German philosophers since Kant and most English philosophers since Reid' dissenting from the theory that sensation offers 'not only the exclusive sources, but the sole materials of our knowledge' (CO, p.125). Three decades later he felt able to record, with some justified self-satisfaction, that his own efforts, coupled with those of his father and Alexander Bain, had greatly improved the public reputation of empiricism (AU, p.270).

Mill's unswerving and effective support for the empiricist cause in the struggle against the a priorist forces of darkness testifies to a consistency of intention which is beyond dispute. But while he was, throughout his career, consistently an empiricist, he was not consistent in the form of empiricism he espoused. Several indications have

been given in earlier chapters of this study as to the nature of the inconsistency which runs through his philosophy of logic and reality; in this final chapter an attempt will be made to bring it into sharper focus.

The problem with a priorists, Mill held, is that they make 'imagination, and not observation, the criterion of truth,' and install their prejudices as truths known independently of experience, and as neither needing nor admitting empirical justification; they lay down 'principles under which a man may enthrone his wildest dreams in the chair of philosophy, and impose them on mankind as intuitions of the pure reason' (CO, p.127). To what he regarded as the systematic error of a priorism, Mill opposed a systematic empiricist doctrine of 'the superfluosity of assuming an instinct to account for that, which knowledge derived from experience will so well explain' (BB, p.255); and he denied that there was in the human mind any idea, feeling or power 'which, in order to account for it, requires that its origin should be referred to any other source' (CO, p.129). This represents a stalwart stand against a priorism, yet it leaves the precise contrast between that position and empiricism still unclear. Mill's claim was that empiricists are right in affirming, and a priorists wrong in denying, the adequacy of experience as the source of all genuine knowledge. But what did Mill intend by the term 'experience'? The truth is that he did not employ it with a constant sense, but sometimes used it as a shorthand expression for something like observation and inductive reasoning, while at other times it appears to have been intended to stand, more narrowly, for what he alternatively referred to as 'sensation,' meaning by this mere phenomenal appearance. This ambiguity in the use of the word 'experience' might not have mattered much had the two usages simply represented broader and narrower applications of the same idea. But unfortunately this is not the case; Mill's two employments of the term 'experience' reflect two different and incompatible philosophical stances - in fact, two different and incompatible varieties of empiricism.

## II

It is reasonable to see Mill as drawn towards two forms of working out empiricism which he had encountered in other writers. One of these is a kind of scientific realism which eschews all postulation of

entities, and all employment of ideas, which cannot be justified in a straightforward manner by observation, experiment and inductive reasoning, these being conceived to reveal the characteristics of a common, external world. The other form of empiricism to which Mill leant on occasions is, by strong contrast, a reductionist doctrine which represents reality as a construct out of phenomenal appearances. This second, more radical variety of empiricism is chiefly supported by the doctrine of the relativity of knowledge, and it brings Mill fairly close to Berkeleyan idealism.

An idea of the first, more realist variety of empiricism is given in the following passage:

If we would know the works of God, we must consult themselves with attention and humility, without daring to add anything of ours to what they declare. A just interpretation of nature is the only sound and orthodox philosophy: whatever we add of our own, is apocryphal, and of no authority.

All our curious theories of the formation of the earth, of the generation of animals, of the origin of natural and moral evil, so far as they go beyond a just induction from facts, are vanity and folly, no less than the Vortices of Des Cartes, or the Archaeus of Paracelsus.

Were it not for the pious reference to the works of God, this could come from the pages of the Logic; but it is actually a quotation from Reid (Reid, pp.97-98). Although Mill disapproved of Reid's philosophy from the point of view of his more radical reductionist empiricism, there are striking similarities between Reid's dislike of the more extravagant flights of philosophy and natural science and Mill's opposition to those who make 'imagination, and not observation, the criterion of truth' (CO, p.127).

But the greatest influence on Mill's realist empiricism was undoubtedly Sir John Herschel, whose famous work, the Preliminary Discourse on the Study of Natural Philosophy, he admitted to have been of 'great help' in writing the Logic (AU, p.217). Herschel, in his turn, confessed a debt to Bacon, to whom, he said, we owe

the development of the idea, that the whole of natural philosophy consists entirely of a series of inductive generalizations, commencing with the most circumstantially stated particulars, and carried up to universal laws, or axioms, which comprehend every subordinate degree of generality

- and from which we then deduce testable consequences (Herschel (1831),



p.104). Mill's own philosophy of scientific method is clearly in the Baconian tradition, as transmitted by Herschel, and it is worthy of note that both his inductivist account of mathematical knowledge and his statement of the canons of inductive reasoning find their origins in Herschel's book.<sup>1</sup> Mill admired Herschel too for his uncompromising rejection of a priorism; 'The high priori Pegasus,' Herschel had written, 'is a noble and generous steed who bounds over obstacles which confine the plain matter of fact-roadster to tardier paths and a longer circuit.' A priorism possesses more 'verve and energy' than the empirical philosophy, and hence its popularity. But its glamour is delusive and dangerous (Herschel (1857), p.227).<sup>2</sup>

Herschel conceded, and Mill followed him here, that the scientist must produce hypotheses or conceptions - though only testable ones - in order to unify his observations. 'The general proposition,' Herschel said, 'is more than a sum of the particulars. Our dots are filled in and connected by an ideal outline which we pursue even beyond their limits, - assign it a name, and speak of it as a thing' (Herschel (1857), p.246). In this way we might, for instance, come to speak of the force of gravity, which our observations and inductions have led us to believe to be universally operative among physical bodies. But Mill insisted that while scientists may reasonably devise new conceptual modes for accommodating the facts of experience, they must never impose purely imaginary schemata on reality. Thus when Kepler conceived that planetary orbits are elliptical, he did not 'put something into the facts' - which, according to Mill, was what Whewell would have thought of him as doing; on the contrary:

Kepler did not put what he had conceived into the facts, but saw it in them. A conception implies, and corresponds to, something conceived: and though the conception itself is not in the facts, but in our mind, yet if it is to convey any knowledge relating to them, it must be a conception of something which really is in the facts, some property which they actually possess, and which they would manifest to our senses, if our senses were able to take cognizance of it (SL, p.295).

Both Herschel and Mill were deeply opposed to the neo-Kantian, non-empiricist views of Whewell, who believed that the combination of observation, experiment and what could be inferred from these was quite inadequate to unlock the nature of reality. In Whewell's opinion, the mind can only make progress in understanding the world because it interprets it in accordance with its own 'Fundamental Ideas,' which it

does not discover in experience but imposes a priori. Such ideas as those of space, force, motion, and cause and effect 'are not derived from experience'; rather:

these ideas possess a power of infusing into their developements [spelling sic] that very necessity which experience can in no way bestow. This power they do not borrow from the external world, but possess by their own nature (Whewell (1847), p.74).

Inspired by Kant's theory of the categories, Whewell asserted that these 'Fundamental Ideas' provide bounds for our thought within which we must think, and beyond which we cannot go; and that it is for this reason that we are disposed to look on certain relationships in nature as necessary (a response, he claimed, which the empiricist cannot satisfactorily explain)(ibid.). Mill was perfectly correct to declare the difference between Whewell's view and that of those who believe that experience is a sufficient basis of all our knowledge to be 'fundamental' (SL, p.297).

The kind of empiricism which, influenced by Herschel, informs Mill's philosophy of science provides the background, too, for his philosophy of logic. We saw in Chapter Five that Mill held that logic is concerned with the 'ascertainment of objective truth,' and that he believed its study would assist us in avoiding 'conclusions which are not grounded in the realities of things' (EH, p.301; SL, pp.10-11). The purpose of inference is to supplement simple observation in the business of attaining knowledge about a world whose characteristics are fixed independently of the constitution and operation of our minds, and which are all in principle discoverable by a combination of observation and inference from observation, without assistance from any faculties of a priori intuition. Mill's theory of logic incorporates a realist theory of error: it is held to be possible to infer and believe false propositions, which misrepresent reality. Thus the account of inference developed in the early Books of the Logic is a major contribution to the empiricist methodology which the work as a whole presents; it serves the essentially practical role of demonstrating how our knowledge of an objective world can be advanced by inference from the observations we make of it. But nothing about this world 'can be learnt except by observation and sound inferences; no intuitive avenue to truth exists, and it is mere delusion to think that it does. Mill made clear, moreover, that logic tells us how we ought to think, and that logical laws are not descriptive of psychological processes. The structure of thought is not identical with the structure of things, but the study of logic

should help us to capture the structure of things more accurately in our thinking. Idealism carried into logic would naturally construe the structures of thought and of things as one and the same; as Bradley remarked, it would account for the truth of the conclusions of our inferences by maintaining that 'the facts are themselves inferential' (Bradley (1883), p.530. No such idea ever surfaces in Mill's philosophy of logic, which is undeviatingly realist in tenor.

Also anti-a priorist while at the same time realist is the immaterialist theory of permanent possibilities of sensation in the eleventh chapter of the Examination. Admittedly this is a very spartan form of realism about the external world, and far from the kind of common sense realism espoused, for example, by Reid. Yet it is realism all the same, for while it rejects matter, it preserves the notion of a world outside the mind, and holds that world to be common to different subjects of experience. On this theory, there remains a distinction between how reality actually is, and how it is thought to be; even though the world is composed of immaterial causal powers to produce sensations, it is objective in character, and whatever the physics of such a world, it is logically possible for subjective representations of the world to fail to coincide with the objective facts. A hasty view of this theory might have it that Mill is indulging in an extravagant speculation quite as rebarbative as the flights of metaphysical and scientific fancy condemned by Reid as 'apocryphal, and of no authority.' But this would not be wholly fair. Strange though the theory is, it is inspired rather by a spirit of caution than of daring. Maybe there are more things in heaven and earth than are dreamt of in this philosophy, but it is another manifestation of the basic empiricist desire to eliminate whatever is not sanctioned by experience. The immaterialist theory nevertheless seems to suffer by having a foot in both of the empiricist camps which Mill, in different moods, favoured: its retention of an objective, external world relates it to the form of realism he shared with Herschel, and even with Reid, yet its elimination of matter draws it towards the more radical and reductionist empiricism to which he alternatively leant.

### III

Mill's reductionist empiricism is anchored in the principle of the relativity of human knowledge. This principle, as he carefully pointed

out, had been understood in different ways by different writers, but for him it expressed the fundamental proposition, which he represented as a legacy from the Lockian tradition, that sensations, and the mind's reflective awareness of sensations as resembling and contrasting, and as falling into particular sequences and groups, were not only the sole sources, but also the sole materials of our knowledge. As we saw, Mill never made up his mind whether to treat the relativity principle as a purely epistemological thesis about the bounds of the knowable, or as making, rather, a semantic claim about the limits of meaningful language (to the effect that we cannot speak meaningfully of what is not reducible to a sensational basis). But in spite of this vagueness about the precise sense of the principle, in adopting it he committed himself to a variety of empiricism which adds to the claim that all knowledge comes from experience, the further claim that, in the last analysis, what is known is only sensations, and the mind's reflective awareness of them. On this more radical empiricist line, both matter and mind are held to be explicable in sensational terms.

Idealism is, indeed, the inevitable consequence of Mill's relativity principle. If sensation is not merely the sole path to knowledge but its sole object, it is impossible that the world which confronts us in experience should be an external world in any realist sense of 'external'; for external objects as realists would construe them exist independently of our sensations of them, while by the relativity principle what we know when our experience presents us with sensations of shape, colour, texture and so on is that subjective reality has the presented characteristics. In his most resolutely idealist moments, Mill spoke of permanent possibilities of sensation, his favoured proxies for objects, as external only in the non-standard - and common sense would hold, very thin - sense that they are not deliberately constructed by the mind, but 'given' to us (presumably in accordance with the laws of mental operation). Of course he did not always adhere to this literal and rigorous application of the relativity principle, and often exchanged an idealist for a merely immaterialist account of the permanent possibilities. Maybe he felt qualms about idealism once it was spelt out starkly. But be that as it may, idealism is the natural destination of anyone who accepts the relativity principle understood Mill's way.

It is the relativity doctrine rather than associationism which supplies the basic theoretical underpinning of Mill's bolder empiricism. This is not to deny that Mill believed that the laws of association play a very important role in the formation of many of the mind's conceptions and convictions. Nor is it to ignore the fact that at the

beginning of Chapter XI of the Examination he went so far as to propose that the laws of association play a central part in our arrival at the belief in an external world. Nevertheless it is not associationism which Mill saw as justifying a reductionist empiricism. The associationist account of the origin of the belief in external reality is not logically incompatible with the denial of Berkeleyan or Millian idealism; to say that certain psychological laws are responsible for our forming a particular conception of reality is not to say anything which in itself entails that an objective and external world either does or does not exist. Once idealism is accepted, associationism could be taken (as Mill presumably meant to take it) to double as an account of the structure of things as well as of the structure of thought; but while associationist principles might be utilised in the enterprise of articulating an idealist world view, they have no proper role to play in establishing that view. The sensationalistic reductionism which issues in Mill's idealism takes its origin in the relativity doctrine with its explicit limitation of our knowledge of reality to our knowledge of sensations. <sup>3</sup>

At this point it is appropriate to repeat the claim made in the Introduction to this study, that the importance of associationism in Mill's philosophy has often been overrated. As a determining element of his thought, the relativity doctrine - which commentators have tended to neglect - is of much greater significance than associationism. Mill certainly thought that associationist principles were of much importance to the thinker of the school of experience eager to provide a unified and anti-a priorist account of the psychological origin of many of our ideas and conceptions. Yet associationism is not the fundamental principle of his reductionist empiricism, and even less does it establish his alternative scientific realist empiricism, which has its roots rather in a dislike of claims to knowledge which are not grounded on observation or on inference from observation. Mill had little doubt of the superiority of associationist psychology (such as that expounded in Bain's major work) to all rivals, and would have seen it as forming an important component of a scientific realist theory of the world; but he did not treat it as vindicating the truth of scientific realism.

From an early date Mill had serious reservations about the wisdom of building a system of philosophy on associationist principles, as his father had done, and he confided to John Sterling in 1839 that 'I am very far from agreeing, in all things, with the "Analysis," even on its own ground' - meaning by 'its own ground' its reliance on

the laws of association (EL, p.406). The chief source of his doubts about associationism as the foundation of a philosophical system we examined in Chapter Five: the laws of association, being purely mechanical in operation, cannot produce rational belief (this being essentially sensitive to evidence in a way for which associationist principles leave no room); therefore associationism fails to be able to account for a crucial aspect of our mental natures. The view that belief is but an 'inseparable association,' wrote Mill,

seems to annihilate all distinction between the belief of the wise, which is regulated by evidence ... and the belief of fools, which is mechanically produced by any accidental association (AN, vol.1, p.407).

But this being so, associationism is irrelevant to logic, its laws neither being identical with the laws of logic nor in any way illuminating them; in fact they do not even throw light on the psychology of rational thinking.

It is curious how often Mill's works have been approached with a set of preconceptions about the significance in them of associationist principles. John Passmore claimed that Mill never questioned the adequacy of associationism, which is quite untrue (Passmore, p.15). Richard Wollheim supposed him to believe that logical thinking involves a movement of ideas in accordance with the laws of association: equally untrue (Wollheim, p.23). Indeed, the view that Mill founded logic on associationism, though utterly without any textual sanction, appears in several commentators, among whom J.H. Randall Jr. is perhaps the most serious offender. According to Randall, Books I and II of the Logic show Mill applying the associationist psychology as an 'empiricist logic' - an extraordinary claim, given that his only reference to associationism in those Books (at Bk.I.ch.iii.sect.7) is contained in a brief anticipation of the theory of the belief in an external world later developed in Chapter XI of the Examination (Randall, p.65). Randall's opinion that in Books I and II Mill 'undertakes the dialectical elaboration of the laws of Association, attempting to reduce all mental operations to those laws,' is possible only for someone whose Mill is wholly a creation of his own fantasy (Randall, p.67). Ernest Nagel appears to come close to a similar view when he writes that 'it is the psychological assumptions of sensationalistic empiricism that are made to support the principles of evidence which emerge in the Logic' (Nagel (1950), p.xxxii). If by 'psychological assumptions' Nagel means associationism, this is false; and it would still be false to say, even without reference to associationism, that Mill's bolder

version of empiricism underlay his theory of logic. (However, Nagel is much more accurate about the kind of empiricism which informs the Logic when he writes that:

The chief emphasis of the Logic is upon the final authority of experience as the general warrant for beliefs, and upon the necessity for verifying propositions by observation of facts if futile speculation is to be avoided--(ibid.).)

More careful critics have avoided these misreadings. Dennis Christopher has recently pointed out the importance of Mill's reservations about associationism in his notes to James Mill's Analysis. And half a century ago O.A. Kubitz observed that Mill did not base logic on association:

Eventually his doctrine was that while association accounts for the manner in which we come to believe, it does not tell us 'when' we ought to believe. It may provide a description of mental processes, but it cannot supply any norms for the operations of the mind in the pursuit of truth. Casual association must be superseded by the more accurate method of observation, analysis, and experiment, of which the inductive methods are the test. Thus for Mill the System of Logic helped to answer the questions left him by the psychology of association (Kubitz, p.24).

This is a great improvement on the views of such commentators as Randall, though it still clouds the issue somewhat over Mill's ideas about the causal role of association in producing belief; as well as it can be ascertained, his view was that rational believing was not even causally dependent on any mechanical force of association: 'I disclaim, as strongly as Dr Whewell can do,' he wrote in an 1851 note to the Logic,

the application of such terms as induction, inference, or reasoning, to operations performed by mere instinct, that is, from an animal impulse, without the exertion of any intelligence (SL, p.287).

Rationally based beliefs, that is, are not produced by association, but must rest on the evidence of one's observations, or on sound processes of inference from them. Kubitz is wrong in suggesting that Mill held that rational beliefs were normally set up by association and justified subsequently by the application of logic; Mill (apparently) supposed that rational beliefs were initially attained by the use of reason,

with association playing no part in their causality; though here he was arguing a stronger claim than an adequate distinction of the causal explanation and the justification of beliefs really demands. <sup>4</sup>

There is a slight excuse for the mistakes of commentators in the fact that Mill himself on one occasion gave a misleading impression of the intentions of the Logic. In the Autobiography he spoke of the need he had felt for a book which would argue for the derivation of 'all knowledge from experience; and all moral and intellectual qualities principally from the direction given to the associations' (AU, p.233). Kubitz remarked that this 'overlooks one of his chief contributions, namely, the construction of a method by means of which associations are to be tested'; and he suggested that in the long interval which elapsed between the writing of the Logic and the Autobiography, Mill became more interested in psychology (a doubtful claim), and so more ready to emphasise the associationist elements in the earlier work (Kubitz, p.54). Now a better explanation of the passage in question, and one which avoids any claim that Mill had changed his mind about the relationship of the laws of logic and those of association, is that he was merely writing rather carelessly in that place, and threw out some phrases more roughly descriptive of the 'school of experience' which he supported generally against the a priorist philosophers than of the real doctrines of the Logic. But whatever Mill later thought he had achieved in that work, a close reading of it quite fails to support the interpretation that it bases logic on associationist psychology.

#### IV

Mill's realist and reductionist forms of empiricism, though differing from each other in the way they render the notion of experience, have in common the important feature that they are global empiricisms, rejecting the possibility of 'thick' a priori knowledge, and insisting that all justification is empirical justification. In Chapter Six we saw that Mill remained constantly committed to global empiricism, granting at most to his a priorist opponents that some basic principles of logic might be a priori in the 'thin' sense of being beneath the possibility of justification altogether. Experience, and only experience, is able, on global empiricist thinking, to provide the justification of those beliefs which are amenable to it. Mill's inconsistency arose



over the manner in which he conceived of empirical justification. If, as the relativity principle holds, all we can really know are our own sensations, then all justifiable beliefs must possess a content capable in principle of being analysed in sensational terms - for any proposition not open to such an analysis must outrun our capacity to settle whether it is true or false. Inspired by the relativity principle, Mill represented propositions about matter and mind as being warrantably assertible by us only because they are really about sensations, and not about any recognition-transcendent noumenal objects or egos.<sup>5</sup> (This did not, of course, rule out the possibility of justifying propositions inferentially; but sound inferences would always be from sensorily-analysable propositions to other sensorily-analysable propositions.) Alternatively, however, Mill talked about empirical justification in a manner indebted not to such radical empiricist forbears as Berkeley, but rather to the kind of scientific realist tradition exemplified by Herschel. Writing in this vein, he demanded that beliefs be supported by observation, or by inference from observation, but without adding any strong reductionist thesis about the content of justifiable beliefs. Observation, on this picture, is our mode of access to a real, external world which is ontologically independent of our mental states. On both of Mill's accounts, it is human sensory capacities which enable us to have any knowledge at all, but on one of those accounts they inform us about something other than and independent of our sensations, while on the other what we know when we have sensations is nothing more than the sensations themselves.

It is a plausible speculation (though like many counterfactuals, difficult to prove) that if Mill had not been sympathetic to the relativity principle, he would not have been a global empiricist. This may seem an odd suggestion in the light of the fact that I have represented him as being, in one mood, inclined towards a non-reductionist, scientific realist view of the world, while at the same time fiercely opposed to the concept of 'thick' a priori justification. Yet it is possible that this combination of positions results from a certain unclarity of thought, and indeed from the same unclarity which disguised from him the presence in his philosophy of inconsistent forms of empiricism; for a concept of empiricism as global in quantity seems more naturally to flow from a concept of it as reductionist, rather than realist, in quality. The reason for this is that the relativity principle offers a rationale for global empiricism which it otherwise lacks. To the a priorist who demands to know why all justification should be by experience, and just what is supposed to be wrong with the notion of 'thick' a priori (i.e.

intuitional) warranty for beliefs, the global empiricist who accepts the relativity principle can reply that it is precisely because all that human beings can know is their own sensations. Now if that is true, there is no longer any opening for the idea of a priori faculties; for evidently the sole required or indeed possible mode of access to a wholly sensational reality is sensation. If, on the other hand, the global empiricist favours scientific realism, it is much less easy for him to respond to the a priorist's challenge. As he does not hold that all reality is sensational in nature, he has to explain how knowledge of a non-sensational reality is possible. But his view that it all comes via observation faces problems. Does observation involve anything beyond bare sensation? If it does not, it needs to be explained how sensation can reliably inform us about an objective, external reality, and a response needs to be made to the sceptical challenge that maybe (for all we know) there is no external world at all, and our sensations are merely items in a long, coherent dream. The difficulty is to see how the global empiricist could answer the sceptic, given that he cannot, without surrendering his position, appeal to any intuitive or innate conviction that there is an external world which is the object of sensations. (Having only sensations to go by, it is obscure how the global empiricist could verify any hypotheses about the relation of sensations to a putative external world.) If, by contrast, observation is represented as being something more than mere sensation, and as capable, as sensation alone would not be, of bringing us knowledge of external reality, the a priorist may fairly complain that whatever it is which observation has and sensation by itself does not is either tacitly intuitional and a priori, or else is something no less mysterious than the rational intuitions which the global empiricist criticises him for upholding. He who elects to combine a global outlook on empiricism with a scientific realist rendering of justification by experience does not, it is true, maintain a logically inconsistent position; but the tension between the two components of his view will make its defence a matter of considerable difficulty for him.

## V

Now the claim that Mill's two empiricisms are incompatible with each other may appear to be resistible on a ground more sophisticated than any we have so far considered in arguing their inconsistency. It

is worth reflecting whether some defence of Mill's position can be mounted on the basis of a distinction between empirical and transcendental levels of analysis of the kind Kant presented in the Critique of Pure Reason. In Kant's opinion, realism and idealism are reconcilable provided that the realism is of the 'empirical' variety and the idealism of the 'transcendental.' Is it possible to apply such a distinction to Mill's philosophical doctrines? And if it is, can it be used to draw those doctrines into consistency?

There is admittedly something ironic about defending Mill by reference to Kant, for Mill regarded the Kantian philosophy with a good deal of disfavour, believing its employment of a priori categories of the understanding to bring it into sharp conflict with the tenets of the 'school of experience.' Moreover, in a note to the final edition of the Examination to be published in his lifetime, he specifically took issue with Kant's thesis that bodies exist in an external space which, however, 'does not exist out of the mind'; the reasoning behind this position seemed to Mill to be 'strangely sophistical' (EH, p.154). Yet this objection is reminiscent of the condemnations which politicians often feel it to be de rigueur to make of the policies of their rivals, when privately they favour those same policies themselves. Indeed elsewhere in the Examination Mill quite openly supported the view that while we cannot prove the real externality of bodies, we are entitled to say that they are external 'in the only sense we need care about: they are not constructed by the mind itself, but merely recognised by it' - and he added, significantly, that 'in Kantian language, they are given to us' (EH, p.187). Evidently Mill, while officially an anti-Kantian, occasionally felt it convenient to allow that the devil has the best arguments.

'By transcendental idealism,' wrote Kant in the Fourth Paralogism, I mean the doctrine that appearances are to be regarded as being, one and all, representations only, not things in themselves, and that time and space are therefore only sensible forms of our intuition, not determinations given as existing by themselves, nor conditions of

objects viewed as things in themselves (Kant, A369; KS, p.345).<sup>6</sup>

On this theory that time and space are not objective constituents of reality, but rather the 'sensible forms of our intuition' (sinnliche Formen unserer Anschauung) which we impose on our experience as its framework, the common sense view that we perceive by our senses objects in an objective, common space and time existing independently of our perceptions falls. But Kant did not leave the matter there. For he

believed that the doctrine of transcendental idealism could be accepted quite consistently with the view that, in one perfectly legitimate sense of 'external,' the objects of perception are external - they are external in the sense that they are represented as being in space; thus on this 'empirical' level - the level, in other words, on which they are experienced as phenomena - objects are real inhabitants of a space. In Kant's words, 'empirical realism' holds that:

Matter is ... only a species of representations (intuition), which are called external, not as standing in relation to objects in themselves external, but because they relate perceptions to the space in which all things are external to one another, while yet the space itself is in us (Kant, A370; KS, p.346).

However, Kant did not believe that, even at the transcendental level, there was nothing outside the mind. For as the causes of our 'intuitions' (i.e., roughly, sense impressions), noumena are admitted to the Kantian scheme, though these objects cannot be directly experienced and are not in space and time:

We see a thing in a place, not because the Noumenon, the Thing in itself, is in any place, but because it is the law of our perceptive faculty that we must see as in some place, whatever we see at all. Place is not a property of the Thing, but a mode in which the mind is compelled to represent it.

(This is, in fact, not Kant, but Mill, giving a succinct and accurate account of Kant's doctrine (EH, p.9).) Kant was, then, a realist about noumena, and one might even be tempted to describe him as a 'transcendental realist' about them, in so far as he meant to accept the reality of a species of existents which are recognition-transcendent, being incapable of being experienced; yet his denial that noumena are in space and time precludes his being described as a transcendental realist about noumena in his own sense of that expression, as will become clearer below.

Mill distinguished in the Examination two different accounts of noumena. He noted that the term 'noumenon' had been 'borrowed from the Schoolmen by the German Transcendentalists,' and meant primarily 'the permanent Reality, of which the other [i.e. the phenomenon] is but the passing show' (EH, p.7). But Kant had employed the term with an extra bit of content: the Kantian noumenon is not situated in space or time (EH, p.9). On Mill's preferred version of the relativity prin-

ciple, noumena in neither the original nor the reformulated Kantian sense were acceptable. But despite this difference over noumena, there are interesting parallels between Mill's and Kant's metaphysics. Mill took care to stress that his view that reality is phenomenal is not antagonistic to another one, namely that what is presented to us in perception is a world of objects standing in spatial relations to one another and to us as percipients. But this is just what Kant termed 'empirical realism.' On the empirical level, the level of description of how things appear in experience, there is a world of external objects; and Mill repeatedly emphasised that he did not wish to deny what the plain man believes about externality when he supposes that in his experience he confronts a world which is apparently objective in character, and not a mental construct. As Mill said, experience is of 'Matter' (EH, p.183). At the empirical level, therefore, there is an external world; and Mill and Kant agreed not just about this, but also that at a deeper level of analysis (which Kant termed the 'transcendental') experience is of phenomena only, and phenomena are not occupants of an objective spatio-temporal world. It seems reasonable to conclude that Mill, like Kant, combined empirical realism with transcendental idealism - which is a position one may or may not feel to be extravagant, but which is at least not crudely inconsistent.

Kant scholars, however, are likely to point to an obvious problem with this attempt to draw a resemblance between Mill and Kant. Mill expressed great admiration for the philosophy of Berkeley, and regarded the Berkeleyan account of matter as very similar to his own (ibid.). But Kant argued that Berkeley had tried to defend the combination of empirical idealism with transcendental realism, and that such a combination was unsound. Yet if Mill's theory is in fact close to Berkeley's, the questions arise whether it is only superficially similar to Kant's, and whether it merits the same objections to which Kant thought that Berkeley's account succumbed.

At first sight it is obscure why anyone should want to maintain realism at the transcendental level with idealism at the empirical. This would - apparently - involve implausibly combining a rejection of the ordinary conceptualisations of experience as presenting us with an external world of things in objective space and time, with a claim of the reality of an objective world of objects in space and time which it transcends our powers to know. But it was not this curious and unattractive position which Kant intended to attribute to Berkeley. Transcendental realism, for Kant, is a view about space and time: it is the view that they are 'properties which, if they are to be possible

at all, must be found in things in themselves' - and so must have objective reality (Kant, B70; KS, p.89). Berkeley, according to Kant, was a transcendental realist because he maintained this view about space, even though he regarded space as 'impossible' and things in space 'merely imaginary,' once it was regarded in that realist way. Therefore Berkeley, in Kant's view, was a transcendental realist without having to assert the existence of objective space and time; transcendental realism involves rather the acceptance of the conditional that if space and time exist, they exist as properties of things in themselves (and so as objective and outside the mind, and not merely as forms of intuition). And Kant went on to propose that it was precisely acceptance of transcendental realism that would naturally lead one to empirical idealism: for once one had granted such a theory of space and time, one would be forced to recognise that it was quite obscure what basis there could be for asserting that the objects of the senses were situated in that objective, noumenal space and time whose reality we are unable to establish through our human epistemic powers:

After wrongly supposing that objects of the senses, if they are to be external, must have an existence by themselves, and independently of the senses, he [the transcendental realist] finds that, judged from this point of view, all our sensuous representations are inadequate to establish their reality (Kant, A369; KS, p.346).

Consequently he will adopt the position which Kant calls 'empirical idealism.'

This is not the occasion for any extensive criticism of Kant, but it is relevant to note that his definitions of transcendental idealism and transcendental realism are not on an equal footing, and neither are his definitions of their empirical counterparts. Transcendental realism was defined by a conditional; transcendental idealism, on the other hand, involves not just the conditional that if space and time exist, they exist as forms of intuition, but also the categorical claim that they do exist (and so exist as forms of intuition). More seriously, because more confusingly, empirical realism and empirical idealism seem to be doctrines in different problem areas. The former, in the version in which Kant accepted it - and also, in my opinion, Mill and Berkeley - is the doctrine that the world presented in experience is a world of things in spatial and temporal orderings; this doctrine is acceptable to all these philosophers because it is about appearance only, that is, about how our experience represents the world to us. (We might rephrase it by saying that phenomena are intrinsically

temporally and spatially ordered.) But empirical idealism, as Kant explained it, is not straightforwardly a denial of this doctrine; what it asserts is not that phenomena do not appear as temporally and spatially ordered, but rather that despite appearances, the objects of our perceptions (phenomena) are not constituents of an objective spatio-temporal framework (and they are not this because, according to the transcendental realism with which empirical idealism is twinned, space and time are not capable of being directly experienced, but, if they exist, are essentially recognition-transcendent structures). It is true that on empirical idealist-cum-transcendental realist tenets there is something bogus about the apparent spatio-temporal ordering of experience: but so there is, too, according to transcendental idealism! If empirical idealism is really to counter empirical realism, it looks as if it must take issue even with the claim that our experience seems to confront us with a world of spatially and temporally ordered items, yet this is a claim which it is highly implausible to deny.

Even transcendental realism, with its implication that space and time are really recognition-transcendent, offers scant basis for denying the empirical realist claim, for while an acceptance of transcendental realism might prompt a change in the terminology of space and time, it lacks a bearing on the fact that our experience presents us with what we would before accepting any terminological change describe as an apparently spatially and temporally structured world; and empirical realism is asserting no more than that fact. For even if a transcendental realist who had fully thought through his position and its implications felt obliged, as Kant alleged he ought, to deny the propriety of describing the situation at the empirical level in terms of the representation of a world of spatially and temporally ordered objects, on the ground that space and time correctly understood are nothing to do with the appearances of things, he would still not be entitled to deny the fact to which the empirical realist was alluding when he affirmed that at the empirical level experience has this character of spatio-temporal structure. Thus we reach the unexpected conclusion that empirical realism and empirical idealism are at most in verbal disagreement with each other (disagreement, that is, over how to employ the terms 'space' and 'time'). Perhaps the empirical idealist would permit it to be said that at the empirical level, we experience a quasi-spatial, quasi-temporal world; and I suggest that the empirical realist could happily reconcile himself to accepting that description of things at the level of appearance.

Providing that a certain liberty is allowed with the ipsissima verba of the First Critique, it seems least confusing to describe Mill, as before, as a transcendental idealist in so far as he denies the existence of any objective space and time outside the mind; the chief difference between this position and Kant's own transcendental idealism is that the latter involves not just the claim that space and time do not exist objectively, but the further positive characterisation of them as forms of intuition. And Mill, like Kant, was also an empirical realist, in the sense that he accepted that at the level of description of the phenomenal content of experience, what is experienced is a spatio-temporally (or at least a quasi-spatio-temporally) ordered world of things (see, for instance, EH, pp.9, 199, 223). Despite the fact that Mill, like Berkeley, lacked Kant's doctrine of space and time as forms of intuition, he shared Kant's view of the appropriateness of a realist description of experience at the level of appearance, along with his belief that experience is really only of phenomena. In my opinion, the similarities between Kant's and Mill's views in this area are more considerable than has usually been supposed.

Is it possible to utilise the distinction between idealism at the transcendental level and realism at the empirical to draw Mill's two forms of empiricism into mutual consistency? The problem which faced Mill's philosophy was that it contained apparently irreconcilable realist and idealist elements. But if the strain of scientific realism in his thought could be identified with empirical realism, and the idealism classified as of the transcendental variety, that seeming inconsistency would vanish. Instead of appearing as an inconsistent empiricist, Mill would now emerge as the sophisticated defender of a subtle, double-level analysis of knowledge and reality. The realism of his philosophy of logic and scientific method could now be thought of as pertaining to the phenomenal appearances presented to us in experience, which constitute for us a world whose characteristics we can learn by observation, assisted by inference and experiment, even though at a deeper level of analysis a realist interpretation of that world would be discarded in favour of an idealist one.

Unfortunately, this attractive reconciling suggestion will not work. The fundamental problem is that empirical realism - albeit a view which can undoubtedly be ascribed to Mill - is not identifiable with the kind of realism defended in his discussions of logic and the methodology of science; and the latter form of realism remains incompatible with idealism.

The essential difference between the two realisms is that while one



maintains the existence of a real, objective, external world, the other is committed merely to the claim that objects appear to occupy positions in a world of objective space and time. Empirical realism does not, of course, deny that an objective, external world exists; but it does not assert that it does either, and it is precisely this aspect of metaphysical neutrality which enables it to be consistently combined with transcendental idealism. As we have seen, the form of empiricist realism present in the treatment of inference and scientific method in the Logic accommodates the notion of a possible lack of agreement between statements and the world - that is, it incorporates a realist theory of error. By this theory, it does not follow from our taking a statement to be true, that it is true; for it takes as the condition of a statement's being true not that it should seem true to us, but rather the (Tarskian) condition that the world should be as the statement affirms it to be. The practical purpose of logic then becomes that of assisting us to secure maximum accord between those of our beliefs which are the product of inference, and the world they concern. But empirical realism, by contrast, abstains from positing such a gap between belief and reality; it is not committed to a realist theory of error - though equally it is not committed against it. The combination of empirical realism and transcendental idealism, however, is another matter: this does exclude a realist view of error, for it eliminates the idea of an external and objective world with which belief can in principle fail to accord. Moreover, the principle of the relativity of knowledge, while compatible with the conjunction of empirical realism and transcendental idealism, remains at variance with Mill's realist form of empiricism: for relativity points the way towards a sensation-alistic reductionism which attempts to close the gap between belief and reality which a realist theory of error posits. <sup>7</sup>

It is not ultimately possible, then, to defend Mill's empiricist philosophy against a charge of inconsistency. The question which this identification of a conflict of intention at the deepest level of his thought obviously raises is: Was Mill too confused about the direction of his philosophy to be counted as a major thinker about logic and reality? I suggest that the answer to this question should be a decided negative. Inconsistency is, clearly, not a happy feature of a philosophical system; inconsistent claims cannot all be true, and a philosophy which contains some therefore contains some untruths. On the other hand, the pitfall of inconsistency is hard to avoid for any philosopher who produced, as Mill did, a great range of stimulating and imaginative ideas on a variety of topics. Mill's importance was not

that he produced a philosophy of impeccable consistency within more or less narrow limits, but that he invented and defended a multitude of powerful and original conceptions about the nature and role of logic, the grounds of knowledge and the nature of reality, which have had a significant bearing on subsequent debate. In particular, he investigated, more thoroughly perhaps than any other British philosopher, the extent to which empiricist responses to these perennially interesting topics could be developed in a plausible manner. It is hard to believe that anyone nowadays concerned to explore the possibilities and prospects of empiricism could fail to learn much from Mill, even where it has to be confessed that he did not reach satisfactory conclusions. For, as Mill himself said, even mistakes can sometimes be illuminating - and the mistakes of a philosopher of Mill's richness of invention can be very illuminating indeed. He himself spoke of his 'willingness and ability to learn from everybody' (AU, p.253), and we do well to approach him in the same spirit as he approached other writers, making a point of

examining what was said in defence of all opinions, however new or however old, in the conviction that even if they were errors there might be a substratum of truth underneath them, and that in any case the discovery of what it was that made them plausible, would be a benefit to truth (ibid.).

## NOTES

### Introduction

1. Time, 12 August 1974, p.63; quoted in The Mill News Letter, vol.X, No.1 (Winter, 1975), p.1.
2. In a letter of 1834 to John Pringle Nichol, Mill candidly admitted his ignorance of mathematical and experimental science; but he added that while his knowledge was 'extremely superficial,' it was nevertheless 'sufficient to have enabled me to lay hold of the methods and appropriate to myself fully as much as any metaphysician has ever done, the logic of physical science' (EL, p.211).
3. W.S. Jevons' savage and influential attack on Mill in the Contemporary Review in 1877-79 (reprinted in Pure Logic and Other Minor Works) was probably the prime source of the rumour that Mill's philosophy is peculiarly inconsistent. See, for instance, Jevons, p.201.
4. In fairness to Locke, it might be added that Mill's account of mathematical knowledge, while superficially more straightforward, turns out on examination to be no less problematic than the Lockian theory.
5. Mill generally spoke of defenders of a priori knowledge as belonging to the 'school of intuition.' In the present study I shall normally label his opponents 'a priorists.' Of alternative possible names, 'intuitionists' could mislead because of its current use for defenders of certain specialised views in the philosophies of morals and of mathematics, while 'rationalists' seems inappropriate as Mill saw himself much less as countering the theories of such 'classic' rationalists as Descartes, Spinoza and Leibniz, than those of Kant and British philosophers inspired by him, such as Hamilton, Coleridge and Whewell.
6. Mill also privately avowed the existence of a polemical purpose to the Logic in an 1842 letter to Auguste Comte (EL, pp.530-31).

7. Mill noted in the second Book of the Logic that he had no intention in that work of compiling a manual of deductive logic, which could easily be obtained elsewhere (SL, p.164). He always considered that Whately's Elements of Logic was a wholly adequate account of the figures and moods of syllogism.
8. Hamilton himself probably based the expression on a passage from Thomas Reid, in which our notion of body or matter is said to be a 'relative' one (Reid, p.322).
9. For Mill's opinion of Berkeley, see especially his late essay 'Berkeley's Life and Writings.'
10. The Logic contains a short discussion of Hume's doctrine of miracles, but even here Hume is mentioned only twice. Mill's references to Hume are never more than passing.
11. James M'Cosh anticipated in the nineteenth century the views of modern commentators that Mill's philosophy was founded on associationism, and particularly criticised his 'wire-drawn attempts to fashion all our ideas out of one or two primitive sources by means of association' (M'Cosh, p.21).
12. Thus I do not entirely agree with Brand Blanshard's estimate of Mill's style: 'he fights, thinks, and writes fairly, even to the point of writing clearly enough to be found out' (Blanshard(1954), p.24). Mill's facility of style certainly merits praise; but the careful reader will soon discover that his meaning is often far from easy to determine.

#### Chapter One

1. Mill said more about inference in perception in his essay 'Bailey on Berkeley's Theory of Vision.'
2. In lieu of a theory of reasoning, Locke merely offered visual metaphors: in inferring, we see a connexion of ideas; we take a view of ideas to discover what linkages there are among them; we use the 'perceptive faculty of the mind' to see ideas 'laid together, in a juxtaposition' (Locke, Bk.IV.ch.xvii).
3. Ryan accused Mill of thinking of 'new knowledge' ambiguously as

'the previously unperceived implications of existing knowledge and as knowledge which was not logically implied by what was known.' But the charge is unmerited; Mill did not succumb to this confusion.

4. Cf. Susan Haack, p.226.

5. For the relationship of Mill's use of 'connotation' to those of earlier writers, see W.R. de Jong, Chapters 2 and 3.

6. Mill denied the status of entities 'per se' not just to classes, but also to universals, genera and species, which he treated as classes under other names (they all have 'individual objects classed under them')(SL, pp.174-75). Note that by 'universal' Mill expressly did not mean attribute; a universal, being in his terminology equivalent to a class, is no more than a set of individual things, and contains nothing real besides; but what entitles a set of things to be called by the same name is their possession of the 'common attributes' connoted by it. (For Mill's theory of attributes, see Chapter Seven, below.)

7. Nota notae was a traditional non-extensional principle of syllogistic validity, with its origin in Aristotle's Categories, 1<sup>b</sup> 10-12. While I argue that Mill's employment of it is ultimately unsuccessful, it is worthwhile to defend him against the strange misunderstanding of his reading of the principle which H.W.B. Joseph has made standard (see Joseph, p.308; cf. Kubitz, p.119, Jackson (1941a), pp.74-75). Joseph argued that Mill wholly fumbled the principle - which properly means that 'whatever qualifies an attribute qualifies the thing possessing it.' Joseph's reading of Nota notae can be represented (where S, M and P stand respectively for the minor, middle and major terms) as: Nota (P) notae (M) est nota rei ipsius (S); and his criticism was that Mill very eccentrically understood it instead as: Nota (S) notae (M) est nota rei ipsius (P), which, in Joseph's opinion, is 'impossible,' as necessitating the 'violent' measure of reading res ipsa as the major term. If this is Mill's reading of Nota notae, it is indeed a strained one. But Mill's discussion suggests that he read the principle not in either of the foregoing ways, but rather as: Nota (M) notae (P) est nota rei ipsius (S). This may be less traditional than Joseph's favoured reading, but it is not absurd in the manner in which the reading he ascribed to Mill is. Mill and Joseph understood the notion of marks or notes rather differently; thus Mill talked of the attributes of man as evidence or marks of mortality, whereas Joseph preferred to say

that mortality is a mark of the attributes of man.

## Chapter Two

1. The label 'the hidden-consequences problem' I owe to John Corcoran, though he cannot be held responsible for the formulation of the problem.
2. Mill always discussed the problem of syllogistic petitio in connection with syllogisms with universal major premises, neglecting the fact that in some third and fourth figure forms it is the minor, and not the major, premise which is universal. However, those forms do not escape the problems of hidden consequences and petitio, and are in any case easily convertible, by traditional methods, into equivalent first figure forms with universal major premises, which raise the problems in just the manner Mill described. (Second figure forms, all with universal major premises, are likewise convertible into first figure forms.) Like Mill and most others who have discussed the alleged petitio of syllogistic proofs, I shall concentrate on the case of first figure syllogisms.
3. Note that Dummett is describing Mill's belief here, not his own.
4. I take this opportunity to correct a common misreading of Mill. It might have been the half-sentence beginning 'Whoever pronounces the words ...' that suggested to Russell (Russell (1951), p.3), as it has done to Arthur Prior (Prior (1962), p.163), that Mill took the view that a universal proposition like 'All men are mortal' is equivalent in meaning to a conjunction of singular propositions, here propositions about the mortality of individual men; there is no other evidence to support the ascription of this view to him. Elsewhere (SL, p.97) Mill plumped clearly for the more plausible view that what a universal proposition expresses is that 'whatever has the attributes connoted by the subject, has also those connoted by the predicate.' In my opinion, Mill's real meaning at p.206 of the Logic was that someone who asserts 'All men are mortal' thereby commits himself to a certain judgement about any individual man to whom his attention may later be drawn; but as he immediately went on to say that this universal proposition could be asserted by someone who had never heard of Socrates, it is unlikely that he believed that its meaning was to be

analysed as a conjunction of propositions about Socrates, the Duke of Wellington, etc.

5. Stewart misquotes Campbell slightly, but preserves his drift. Campbell thought that a syllogism, as a condition of its validity, must commit a petitio, and thus cannot 'forward us in the knowledge of things a single step' (G. Campbell, vol.1, p.175). Syllogising, however, can assist us in 'the adjustment of our language, in expressing ourselves on subjects previously known' (ibid., p.174), and so is not entirely useless.

6. I am grateful to John Corcoran for the Descartes reference.

7. Mill was quoting from the first edition of Whately's Elements, p.179. Whately later changed his wording somewhat: cf. eighth edition, p.163.

8. For further historical observations on the fallacy of petitio principii, see C.L. Hamblin's Fallacies.

9. It can, of course, be said of this syllogism, as it can of other suasive syllogisms, that in accepting the premises we have already determined the conclusion, and it is because he misunderstood the sense in which this is true that Mill believed there was a petitio problem for suasive syllogism. But in the present case there is no likelihood of misunderstanding the claim to mean that the conclusion must be known before the premises; so suspicion of petitio does not arise.

10. I assume that on Mill's view, all syllogistic major premises which are not stipulative are empirical.

11. Private communication. I have developed and recast Corcoran's argument somewhat.

12. Mill appears to have forgotten at this point that syllogisms with stipulative major premises are not preceded by an inductive first stage.

13. For instance, if I know that a complete enumeration has established that all students present at the Professor's logic lecture last Friday were asleep, but I only subsequently learn that Mary Thinkwell had been present then, I can now without petitio deduce the illuminating and shocking conclusion that Mary was among the sleepers.

Chapter Three

1. See note 2 to Chapter Two for the simplification involved here.
2. There is a large literature, inspired by Nelson Goodman's Fact, Fiction, and Forecast, on why we consider some predicates to be more projectible than others, and frame our expectations about natural regularities in terms of them. Relevant though this literature is to a thorough study of the rationality of our inductive projections, reasons of space prevent its investigation here, where it must suffice simply to assume that there are in nature patterns which are lawlike and capable of identification as such.
3. Well known presentations of this view are to be found in Ryle (1950), Toulmin, and Nagel (1961). For some sensible criticisms of the notion of material rules of inference, see Kyburg, Chapter Eight.
4. Hence I disagree with H.G. Alexander, who has argued that the question of the truth of inference rules is always logically inadmissible. He probably believes this because he wants to construe rules of inference as having the nature of imperatives or permissions which cannot, logically, be true or false. But if an indicative proposition like 'All men are mortal' can be treated as a genuine rule of inference, Alexander's claim must fall. (See Alexander, p.318).
5. If Mill can be ascribed the view that neither the Dictum nor the Nota notae are required as rules of inference, it is an interesting if obscure question whether he would have held that the Nota notae, while not thought in an inference, still provides in some sense a description of the semantic relationships of the syllogistic propositions. Certainly the Nota notae captures neither the use of the major proposition as a rule, nor the fact that the syllogism is now conceived as a process of 'interpretation' of an inference whose premises include more than just the syllogistic minor. But Mill did not refer again to the Nota notae after proposing that the major proposition of a syllogism is its rule, and it is impossible to be sure what his final view of it was.
6. The Kneales have described Mill as holding that the rules of syllogism are second-order principles about the principles of inference



which people actually use (W. & M. Kneale, p.377). The precise sense of their interpretation they do not clarify, but it is doubtful whether it accommodates Mill's insistence that syllogising is of concern to the practitioner, and by no means only to the theorist, of reasoning. The Kneales appear to believe that Mill thought of the rules of syllogism as providing a theoretical articulation of the movement of thought in which people are engaged when they are reasoning from particulars to particulars; but they failed to note that he considered an actual reference to the syllogistic forms necessary to keep reasonings on the rails.

7. In admitting the real existence of kinds, Mill was not retracting his opposition to the quasi-Platonic entities he variously termed 'classes,' 'universals,' 'genera' and 'species' and rejected in Book II (SL, pp.174-75; cf. note 6 to Chapter One, above). Mill believed that natural kinds were not arbitrary groupings of objects, because they depended on the possession by their members of certain common attributes; but he never held that they had reality as transcendental substances, existing over and alongside their members.

8. Beddoes' book was a polemic against those who had argued that the mathematical sciences were deductive in nature, and should thus be taught as deductive theories. In Beddoes' view, such a science as geometry should be presented as standing on an empirical basis, a real conviction of the truth of geometrical propositions only being attainable by a close scrutiny of actual geometrical diagrams. 'I hope to be able to show,' he wrote, 'that the mathematical sciences are sciences of experiment and observation, founded solely upon the induction of particular facts, as much so as mechanics, astronomy, optics or chemistry' (Beddoes, p.15). Beddoes evidently thought that because the examination of diagrams may be of considerable help in learning the rudiments of geometry, the appropriate justification of geometrical propositions cannot be a priori, but must be via 'experiment and observation' - a claim which by no means follows, because it may be that, however we learn them, the truth of general geometrical theses can be established fully and finally only by a priori explication of basic geometrical concepts. The tone of Beddoes' book is immoderate, even virulent (Plato, for instance, is referred to as the 'father of mysticism' and author of 'ravings' (p.120)).

#### Chapter Four

1. I am indebted for this information to Miss Pauline Adams, custodian of Mill's books now at Somerville College, Oxford. Harriet R. Holman records that the American novelist T.N. Page purchased at Avignon in 1906 an annotated copy of 'Hume's Essays' which had belonged to Mill, the present location of which is unknown (Holman, p.20). This book might well have been Hume's Essays, Moral & Political (first issued in 1741), a work in Addisonian vein which contains nothing about the problem of induction. In an 1868 letter to the publisher William Longman, Mill praised Hume's philosophical works, mentioning his Essays and the Treatise by name, but made no reference to the nature of their contents (LL, p.1388).

2. It becomes clear from an examination of Mill's references to the law of causation that he understood it to assert not barely that every event has a cause, but also that causal relationships follow regular patterns.

3. Strictly speaking, this was not the view which Reid and Stewart were pressing. They did not deny that if uniformity can permissibly be presupposed, experience will then be a guide to the future; but they disagreed with the claim that knowledge of uniformity itself is a product of experience. Our knowledge of uniformity, it seemed to them more plausible to say, was either instinctive, or the result of rational intuition, or a gift of divine providence. (For more on these authors, see the appendix to this chapter.)

4. Mill's example of the belief in the sun's rising tomorrow was probably drawn from Reid, who used it when discussing the psychological character of belief about the future; Reid actually cited Hume's Treatise in his account, but without seeing that Hume's most important contribution concerned the justification of belief about the unobserved, rather than its psychological explanation (Reid, p.199). Hume himself may have been stimulated to discuss the belief in the sun's rising tomorrow by the use of the example in Archbishop Tillotson's Rule of Faith (Tillotson, who was not discussing induction, cited it as an instance of a belief which, though it cannot be known with infallible certainty, can be known with a lesser 'moral certainty' (Tillotson, p.559)).

5. Cf. Ludwig Wittgenstein, Philosophical Investigations, I.sect.258 and passim.
6. It is hard to see Max Black's well known defence of self-supporting inductive arguments as anything more than a philosophical jeu d'esprit; certainly it has convinced very few people that an inductive justification of induction need not be circular. (See the contributions of Black and Peter Achinstein to the symposium 'Self-Supporting Inductive Arguments' in Richard Swinburne (ed.), The Justification of Induction.)
7. Rational inductive thinking could be practised without any explicit employment of the principle of the overall uniformity of nature. But it would need to consider the kind of lawlike regularities expressed by local uniformity principles, and it is more plausible to hold that it should treat them as genuine premises, rather than as 'memoranda,' as in Mill's account.
8. This, of course, is why he held that major premises could be dropped from arguments without detriment to the cogency of the proof.

#### Chapter Five

1. At one place in the Examination, Mill made what initially appears to be an awkward attempt to combine the realism of his philosophy of logic with his leanings towards idealism in metaphysics. 'Concepts, Judgements, and Reasonings,' he wrote, 'should agree with the reality of things, meaning by things the Phaenomena or sensible presentations, to which those mental products have reference' (EH, p.365). As Mill generally used the term 'phaenomena' in Kantian fashion, in contradistinction to 'noumena' (though he was unwilling to countenance the existence of noumena), this sentence seems to show him reneging on the realist view that truth is conformity to objective, mind-independent reality. His subsequent discussion, however, gives no indication that he had altered his view that truth is conformability to objective fact, but suggests rather that what he was misleadingly expressing in the quoted sentence was the thought that it is the conformity of propositions to the presentations of sense which is our criterion that they conform to objective fact and so are true (cf. EH, p.366).

2. For further discussion of these features of belief see Bernard Williams, 'Deciding to Believe,' and my own 'A Simple Argument for Faith Requiring Reasons.'
3. For the controversy between Mill and Spencer see the Logic, Bk.II. ch.vii; the Examination, Ch.VI; the early pages of Spencer's Principles of Psychology; and Spencer's article 'Mill versus Hamilton - The Test of Truth.'
4. That Mill is guilty of committing the psychologistic fallacy has been alleged by, inter alia, Husserl (1969 and 1970), Blanshard (1948), Nagel (1950), Nordquest and Richards.
5. Quoted by Husserl ((1970), vol.1, p.93).
6. How very odd it is to believe a direct self-contradiction has been well brought out by John N. Williams in his paper 'Inconsistency and Contradiction.' Like Mill, Williams doubts whether such beliefs are really possible (Williams, p.600).
7. Mill might with equal reason have held that the other two laws of thought, and logical laws in general, apply properly only to meaningful propositions, to which alone truth values can be assigned.
8. Ellis himself mistakenly thinks that Mill accepted the 'crude' form of psychologism (Ellis, p.100).

## Chapter Six

1. The label 'global empiricism' I have taken from Crispin Wright (Wright, p.321); the statement of the position will be refined in the course of the present chapter. It is worth noting that a global empiricist is not committed, qua global empiricist, to denying the possibility of deductive inference (though this is, in fact, a denial that Mill wanted to make). A deductive inference may be described as a priori on the basis that the conclusion drawn expresses a logical implication of the premises (and not a projection from them, as in inductive reasoning). However, a global empiricist need not find anything objectionable in the process of deducing the logical implications of a set of premises, though he will insist on regarding members of premise sets,

and those laws of logic on which the soundness of inferences rests (in so far as the question of justification can arise about these at all - a point taken up later in this chapter), as finally dependent for their justification on experience alone. He will allow that propositions can be known by being deduced from premises, but he will nevertheless classify all deduced propositions as empirical, holding that at no stage in their derivation have premises not themselves ultimately justified by experience been employed.

2. The review essay 'Grote's Aristotle' was published in the final year of Mill's life (1873). The discussion of the 'logical axioms' is not very perspicuous. Mill suggested that the laws of contradiction and of excluded middle 'do not need the support of a gathered experience' (p.499), but he also ventured the (presumably psychological rather than epistemological) observation that people normally need to have experience before they can apprehend the truth of these laws (p.500). Neither of these ideas is developed at length.

3. Mill's construal of the a priorist position strongly suggests, though he was not explicit about this, that he understood a priorism to maintain that axioms are true by virtue of meaning - a doctrine of which much has been heard in the present century. His own view, in contrast, was that basic propositions of logic and mathematics are true rather by virtue of the way the world is than by the linguistic conventions which bestow meaning on them.

4. Mill was less acute than Berkeley here. While Berkeley thought that ideas were in general to be equated with images, he did acknowledge that to certain of our 'notions,' for instance those of the mind, of spirit and of God, no images corresponded. (See, for instance, Berkeley pp.157-58; Berkeley thought, incidentally, that the term 'idea' was not strictly appropriate for imageless 'notions'.)

5. Mill no doubt believed the same of the law of identity when he wrote about it in the Logic - but then he would have thought of the law as beneath justification because too trivial to require it.

6. A global empiricist is likely to place special weight, as Mill did, on the capacity of inductive inference to lead us to knowledge of principles of the kinds held by a priorists to be known by 'thick' a priori

intuition. But note that he need not follow Mill in disallowing the possibility of knowledge attained by deductive methods, though he will insist that the ultimate basis of deductive demonstrations is in experience (cf. note 1 to the present chapter).

7. It may have been the H/W objection towards which Russell was gesturing in his terse remark in The Problems of Philosophy that empiricism about mathematics fails because 'the validity of the inductive principle itself cannot be proved by induction' (Russell (1911), p.47). And in his protestation of the need for the demonstrative reasoner to have an intuitive apprehension of the agreement or disagreement of two ideas, 'for if it were not so, that yet would need a proof,' Locke too may have been showing some awareness of the objection (Locke, vol.2, p.140).

8. See Wright, op.cit., for an extended discussion of these themes.

### Chapter Seven

1. Hamilton's quotations from authors alleged to have accepted the relativity principle are in his Discussions on Philosophy [&c.], pp.640-42. Mill's criticism of Hamilton's use of these authorities is rather oddly absent from post-1862 editions of the Logic; possibly Mill felt that the material was more appropriately reserved for the Examination (first edition 1865), where Hamilton's views of earlier writers are given adverse notice at pp.18-19.

2. Cf. Hamilton: 'Of things absolutely or in themselves, be they external, be they internal, we know nothing, or know them only as incognisable' (Hamilton (1866), p.638).

3. But Mill, unlike Hamilton, at least admitted that some major eighteenth century philosophers had not accepted the relativity of knowledge, among whom he singled out Reid for special mention (SL, p.61). Hamilton's treatment of Reid is very curious. Reid proposed that from the sensation of smelling a rose, 'I am led, by my nature, to conclude some quality to be in the rose.' This is fairly evidently intended as an indirect realist analysis, yet Hamilton, who as Reid's editor should have understood his author rather better than this, construed Reid as

asserting that the quality in the rose 'is, in fact, except as an imaginary something, unknown' (Reid, p.310).

4. Note that the Kantian version of the relativity doctrine is still inconsistent with indirect realist theories of perception, which do not accept that the external objects which cause our sense impressions are unknowable.

5. Mill's argument is not, in fact, very convincing. It is not clear why our not having suitable faculties to apprehend the inner nature of noumena, if there are any such, should prevent our saying meaningfully that God could know that nature, on the basis of his superior faculties. A more plausible assertion Mill could have made is that if God were able to apprehend the inner nature of noumena, he could not convey his understanding to us (or not, at any rate, unless he provided us with suitable faculties).

6. A similar line of thought informs John Foster's recent book The Case for Idealism. Foster claims that 'to construe the physical world as non-mental is to put its intrinsic nature beyond the scope of positive transparent specification of even the most generic kind' (p.122).

Non-mental space and its non-mental occupants are simply outside the range of meaningful human discourse, though we usually make the mistake of believing that ordinary physical object language can refer to them. Mill would have regarded Foster's argument as a powerful application of the relativity doctrine.

7. And a further kind of case, which Mill did not consider: if you and I both look at the bookcase, our sensations of its brown colour are numerically distinct, though we take them to inform us of a single colour quality of the bookcase.

8. Godfrey Vesey, in 'Sensations of Colour,' has noted further difficulties arising from Mill's view that attributes are to be explained as mere resemblances among sensations. One problem is that the possibility of a common meaning for words like 'brown' employed on the basis of sensation becomes dependent upon the coincidence in the subjective senses of resemblance of different individuals; for there is no reference allowed to resemblances being resemblances in some common, non-subjective respect to ground the claim that a term like 'brown' is univocal (cf.

Vesey, p.121). But it less clear that Vesey's criticism finds the right target when he makes the further objection that it is obscure how, on Mill's theory, a person can describe a sensation he is having for the first time as a sensation of brown, it being an implication of that theory that someone who applies an attribute term must satisfy the condition that he be aware of a resemblance among sensations (such resemblances being what attribute terms stand for) (Vesey, p.122). For it would be open to an individual in this circumstance to suppose that his sensation resembles those previously had by other people, providing that he is entitled to assume that other people do have sensations which resemble his own; the true difficulty, however, is that his right to assume this can be challenged (because what is required is that he be justified in supposing that other people's qualia resemble his own; and it is not clear that he can have this justification).

9. For a full account of resemblance nominalism and its difficulties, see Armstrong, ch.5.

#### Chapter Eight

1. That Mill is engaged in two tasks in Chapter XI of the Examination has been noted by J.P. Day in his paper 'Mill on Matter.'
2. The first three laws have been given in Mill's own words, the fourth in a summary form. For variant statements of the first three see SL, p.852, BP, p.360. (The fourth law appears only in the Examination.)
3. Sir William Hamilton had held that we become aware of the existence of external objects by a species of intuition. Mill, with some justice, thought the reference to a faculty of intuition wholly obscurantist, and urged against it Hamilton's own 'Law of Parcimony' that 'Where there is a known cause adequate to account for a phaenomenon, there is no justification for ascribing it to an unknown one' (EH, pp.182-83). By a 'known cause,' Mill meant to refer to sensation and reflection on sensation, as described by the 'Psychological Theory' - which, for all the ambiguity and vagueness of its presentation, does manage to avoid postulating anything as mysterious as Hamiltonian intuition to account for our belief in an external world.



4. Malebranche, however, Mill noted, still believed in the existence of this superfluous wheel because he thought its existence asserted in scripture (EH, p.204). (For a recurrence of the 'superfluous wheel' metaphor, see Wittgenstein's Philosophical Investigations, I.sect.271).

5. Berkeley, as Pitcher has observed (Pitcher, ch.10), himself held early in his career a view similar to this. But in the writings he prepared for publication he asserted that objects only exist when they are present as ideas in some mind (see, for instance, Berkeley, p.158). This is a highly unsatisfactory view, not redeemed by Berkeley's helping himself to the thesis that ideas no one else is thinking about continue to exist in the mind of God; for it is not plausible to hold that the idea of a tree now in God's mind is numerically identical with the idea of a tree formerly present in mine, and God's now having an idea of a tree qualitatively similar to an idea I formerly had does not serve to maintain my idea (and thus my tree) in existence.

6. The critic was Francis O'Hanlon, who wrote a pamphlet entitled A Criticism of John Stuart Mill's Pure Idealism, to which Mill replied in a note added to the third edition of the Examination (p.203ff.).

7. This is a prospect which commentators have ignored. Typical of many in this connexion are H.H. Price and Alan Ryan. Price noted that Mill held that matter consists of sensations and possibilities of sensation, but immediately after referred to 'this vast mass of actual and possible sense-data' (a sense-datum presumably being for Price closer to a sensation than to a possibility of sensation) (Price (1926/27), p.112). Ryan, after recording Mill's definition of matter as a permanent possibility of sensation, proceeds to assert that 'Mill's identification of objects with possible sensations seems almost more shocking than their identification with actual ones' (Ryan (1970), p.97).

8. There appear to be no significant differences between Mill's use of 'sensations' and the modern phenomenalist's talk of 'sense-data'; accordingly I shall here treat the two terms as equivalent in meaning.

9. For an objection in similar vein to 'idealism,' see Venn's Empirical Logic, p.16.

10. At least one commentator has become very confused over Mill's talk

of possibility. J.P. Day has written: 'to say that there is a possibility of snow is simply to say in other words that snow exists potentially: it is not to say that a possibility, or anything whatever, exists actually' (Day, p.57). It is not clear what it means to say - still less, 'simply to say' - that snow exists potentially. Yet Day's difficulties indicate how great the need is to clarify the notion of possibilities of sensation before Mill's theory can be properly assessed.

11. See Hartry Field, 'Realism and Relativism,' p.559. Field's target is actually a little more restricted than mine. He is reacting to Putnam's suggestion that we cannot properly relate properties of phenomenal objects to the powers of individual noumenal objects, but are forced to say, more vaguely, that they are related to powers of the world. Field contends that 'it makes no sense to say that something has a dispositional property without having a ground for the disposition,' and that, whatever precisely Putnam meant by his claim, he should at least be ready to allow that dispositional properties to affect our senses are grounded in 'lower-level' properties, perhaps of a noumenal sort. Now Mill appears to rule out not just that there are such lower-level properties to be the grounds of powers to cause sensations, but also that there is anything having properties of either level - even anything referred to by such an unspecific phrase as Putnam's 'the world.'

12. To be remotely plausible, the theory must allow that objects, as causal powers to produce sensations, are able to operate on subjects at a distance. The physics of such interaction at a distance are obscure, but it is evident they could not involve any passage through space of numerically identical 'objects' such as photons. It would be reasonable to refuse to accept the theory until some explanation had been provided of the nature of the causal relationships between subjects and spatially removed objects, and also of how permanent possibilities interact with each other (as Mill claimed they do).

13. This view of time is similar to Berkeley's ('Time, therefore, being nothing, abstracted from the succession of ideas in our minds ...' (Berkeley, p.162)).

14. Thus Dummett oversimplifies the situation when he writes that idealism stands opposed to materialism (Dummett (1981), p.504). The opposite of materialism is immaterialism, and immaterialism is not

logically committed to denying the existence of objective space and time.

15. Some readers will have qualms about Mill's interchangeable use of 'mind,' 'self' and 'ego.' But it is questionable whether these words have acquired sufficiently sharp boundaries of employment for any very substantial objection to Mill's practice to be pressed. His project is to enquire whether human mental life can be analysed without remainder in terms of bundles of mental states, or whether room has to be left too for some form of substratum or base to support or collect mental states, and to serve in addition as the principle of unity and distinction of human subjects. Once his intentions are grasped, it seems unnecessary and distracting to quibble about his usage of an inevitably imprecise terminology.

16. See David Hume, A Treatise of Human Nature, Bk.I.pt.iv.sect.6. Hume voiced doubts about his theory in an appendix to the work. (For an interpretation of that appendix, and for further discussion of bundle theories of the mind, see my note 'What Was Hume's Worry About Personal Identity?')

17. Mill may not have noticed that not all memories and expectations concern the self: not, for instance, a memory of the date of the Battle of Hastings, or an expectation that the Conservative Party will win the next election.

18. Alan Ryan has argued that Mill's failure to clarify the nature of personal identity is a weakness 'at the heart of the metaphysics on which his system of ideas rests' (Ryan (1970), p.xx). He justifies this by saying that for Mill, the identity of physical objects 'is parasitic upon the mind of the percipient who, so to speak, builds his expectations into things' (p.xvii), so that if Mill cannot explain personal identity, he cannot explain object identity either. This calls for two comments. First, Ryan's criticism can apply at most to the idealist view that the principles of the unity of objects are psychological principles, such as the laws of association, operating within a single mind. While Mill occasionally took this line, he frequently maintained that objects are permanent possibilities of sensation of an objective kind within a common world, and with a nature independent of any mind. On this view, the unity of objects is the product of certain objective

causal relations forming into groups possibilities of sensations of (primarily) resistance, extension and shape; and while minds can recognise the unity of objects, they do not construct it. But, secondly, Ryan's objection really fails to have any force even against Mill's idealist theory of objects. For what that theory actually requires is not that he should have explained personal identity, but merely that he should presuppose the persistence of selves to be a fact. Now Mill did indeed presuppose this, though he confessed himself ultimately unsure how to analyse the identity of the self. His failure to analyse personal identity does not entail that he failed to analyse the identity of objects, even if the identity of objects presupposes the existence of personal identity. Ryan appears to be confusing the situation here with one in which the first stage of a two-stage argument delivers as its conclusion a proposition which then becomes an essential premise of the second stage; clearly, if the first stage fails, the second will fail too, as it contains an unsupported premise. But Mill was not trying to prove the thesis of continuing self identity, but to analyse it; he followed the common belief of philosophers and laymen alike that it is true.

#### Chapter Nine

1. See Herschel (1831), pp.75-76, 151ff. For Herschel's account of mathematical truth see too his essay 'Whewell on the Inductive Sciences,' reprinted in Herschel (1857). Herschel's empiricist view of mathematics was preceded by the much cruder ideas of Thomas Beddoes (on whom see note 8 to Chapter Three, above).
2. With his other borrowings, Mill even took over from Herschel the punning phrase 'high priori' (at SL, p.187).
3. Mill noted that some philosophers of the school of experience had thought that associationism supported the relativity principle (BP, p.343) - but his discussion gives no hint that he shared this view, which he mentioned only in the course of a passage about the limits of associationist explanations.
4. A possibility Mill failed to see is that a belief can be produced by a causal process, such as association, unsuitable for constituting it a rational one, yet be justified subsequently by observation or inference. Beliefs can alter their status as rational or irrational.

For instance, a belief originally founded on prejudice may sometimes be confirmed later by appropriate evidence; while one initially supported on seemingly solid grounds will become irrational if maintained after stronger evidence to its falsity has come to light.

5. Though we saw in Chapter Eight that, faced with the difficulty of constructing one, Mill eventually wavered in his confidence that a satisfactory bundle theory of the mind or self was possible.

6. References in the text to the Critique of Pure Reason follow convention in denoting the First Edition of the work by 'A' and the Second Edition by 'B'. 'KS' abbreviates 'Kemp Smith,' whose translation is quoted.

7. In an article of scant cogency ('John Stuart Mill and Immanuel Kant on Nature'), Bernard Lightman has argued that Mill's philosophy is consistent because it combines transcendental realism with empirical idealism. According to Lightman, to accept transcendental realism as Mill does is to accept the existence of 'nature' as 'a self-existing, independent entity' (Lightman, p.6). But this is not, though it purports to be, Kant's notion of transcendental realism, and in fact Lightman fails to show that he has the slightest grasp of the Kantian terminology of 'empirical' and 'transcendental,' 'realism' and 'idealism.' He also neglects to consider Mill's relativity principle, which leads him falsely to assign to him the view that there is 'an unknowable external world which exists independently of man and acts as the "exciting cause of sensations"' (p.7) - a view which Mill mentions only to ascribe it not to himself but to Kantians (though even then it is not identical, as Lightman claims, with what Kant calls 'transcendental realism'). As no clear distinction between transcendental and empirical levels ever emerges in Lightman's discussion, he cannot succeed in demonstrating the consistency of Mill's philosophy when he attributes to him, alongside the fore-mentioned view, the belief that, at the 'empirical' level, 'nature becomes each man's individual illusion' (p.9) (which is, in any case, not at all the way in which Mill would have wanted to express his idealist thesis). It is also difficult to take seriously Lightman's claim that 'One searches in vain for any indication that Mill viewed nature as related to man' (pp.6-7), a statement which fails to have any discernible connexion with either of

(Note on p.239)

Mill's two forms of empiricism. (Lightman is also apparently quite oblivious to Kant's reasons for dissatisfaction with the combination of transcendental realism with empirical idealism, as he could hardly avoid being given that he has no understanding of Kant's doctrine of space and time from which that dissatisfaction emanates.)

## B I B L I O G R A P H Y

### Part A: Works by John Stuart Mill, with Abbreviations

('CW' abbreviates Collected Works of John Stuart Mill, general editors J.M. Robson et al. (Toronto and London: Univ. of Toronto Press and Routledge and Kegan Paul).)

- AN Editorial notes to James Mill's Analysis of the Phenomena of the Human Mind (see under Part B: Mill, James).
- AU Autobiography. Ed. by J.M. Robson and J. Stillinger (CW, vol.1), 1981.
- BB 'Bailey on Berkeley's Theory of Vision,' in Essays on Philosophy and the Classics, ed. by J.M. Robson, intro. by F.E. Sparshott (CW, vol.11), 1978.
- BE 'Bentham,' in Essays on Ethics, Religion and Society, ed. by J.M. Robson, intro. by F.E.L. Priestley and D.P. Dryer (CW, vol.10), 1969.
- BL 'Berkeley's Life and Writings,' in CW, vol.11.
- BP 'Bain's Psychology,' in CW, vol.11.
- CO 'Coleridge,' in CW, vol.10.
- EH An Examination of Sir William Hamilton's Philosophy. Ed. by J.M. Robson, intro. by Alan Ryan (CW, vol.9), 1979.
- EL Earlier Letters, 1812-1848. Ed. by Francis E. Mineka (CW, vols.12, 13), 1963.
- GA 'Grote's Aristotle,' in CW, vol.11.
- LL Later Letters, 1849-1873. Ed. by Francis E. Mineka and Dwight N. Lindley (CW, vols.14, 15, 16, 17), 1972.
- SL A System of Logic: Ratiocinative and Inductive. Ed. by J.M. Robson, intro. by R.F. McRae (CW, vols.7, 8), 1973.
- WE 'Whately's Elements of Logic,' in CW, vol.11.

### Part B: Works by Other Authors

Achinstein, Peter: 1974, 'Self-Supporting Inductive Arguments,' in The Justification of Induction, ed. by Richard Swinburne, London: O.U.P.

- Alexander, H.G.: 1958, 'General Statements as Rules of Inference,' in Minnesota Studies in the Philosophy of Science, II, Minneapolis: Univ. of Minnesota Press.
- Anderson, John: 1962, Studies in Empirical Philosophy, Sydney: Angus & Robertson.
- Anschutz, R.P.: 1949, 'The Logic of J.S. Mill,' in Mill: A Collection of Critical Essays, ed. by J.B. Schneewind, New York: Anchor Books.
- Anschutz, R.P.: 1953, The Philosophy of J.S. Mill, Oxford: O.U.P.
- Aristotle: 1963, Categories and De Interpretatione, tr. with notes by J.L. Ackrill, London: O.U.P.
- Armstrong, David: 1978, Nominalism and Realism (vol.1 of Universals and Scientific Realism), Cambridge: C.U.P.
- Aune, Bruce: 1979, Kant's Theory of Morals, Princeton: Princeton University Press.
- Ayer, A.J.: 1954, 'Phenomenalism,' in Philosophical Essays, London: Macmillan.
- Ayer, A.J.: 1956, The Problem of Knowledge, Harmondsworth: Penguin Books.
- Bailey, Samuel: 1829, Essays on the Pursuit of Truth, London: R. Hunter.
- Bain, Alexander: 1882, John Stuart Mill. A Criticism with Personal Recollections, London: Longmans, Green, & Co.
- Bain, Alexander: 1895, Logic: First Part. Deduction, London: Longmans, Green, & Co.
- Beddoes, Thomas: 1793, Observations on the Nature of Demonstrative Evidence, London: J. Johnson.
- Bennett, Jonathan: 1972, Locke, Berkeley, Hume: Central Themes, London, O.U.P.
- Berkeley, George: 1910, A New Theory of Vision and Other Writings [A Treatise Concerning the Principles of Human Knowledge, Three Dialogues between Hylas and Philonous], London: Dent (Everyman's Library).
- Black, Max: 1970, 'The Justification of Logical Axioms,' in Margins of Precision, Ithaca and London: Cornell Univ. Press.
- Black, Max: 1974, 'Self-Supporting Inductive Arguments,' in The Justification of Induction, ed. by Richard Swinburne, London: O.U.P.
- Blanshard, Brand: 1948, The Nature of Thought, London: Allen and Unwin.
- Blanshard, Brand: 1954, On Philosophical Style, Manchester: Manchester University Press.
- Bradley, F.H.: 1883, The Principles of Logic, London: Kegan Paul, Trench, & Co.
- Bradley, F.H.: 1924, Ethical Studies, Oxford: Clarendon Press.



- Bradley, F.H.: 1935, 'Association and Thought,' in Collected Essays, vol.1, Oxford: Clarendon Press.
- Britton, Karl: 1947/48, 'The Nature of Arithmetic. A Reconsideration of Mill's Views,' Proceedings of the Aristotelian Society, 48.
- Britton, Karl: 1953, John Stuart Mill, Harmondsworth: Penguin Books.
- Brown, Thomas: 1818, An Inquiry into the Relation of Cause and Effect (3rd. ed.), Edinburgh: A. Constable and Co.
- Brown, Thomas: 1851, Lectures on the Philosophy of the Mind (19th. ed.), Edinburgh: Adam and Charles Black.
- Butler, Joseph: 1740, The Analogy of Religion (3rd. ed.), London: John and Paul Knapton.
- Campbell, Keith: 1974, 'One Form of Scepticism about Induction,' in The Justification of Induction, ed. by Richard Swinburne, London: O.U.P.
- Campbell, George: 1776, The Philosophy of Rhetoric, London: Strahan and Cadell.
- Christopher, Dennis: 1979, 'Husserl and Mill: A Rejoinder,' The Mill News Letter, 14.
- Day, J.P.: 1963, 'Mill on Matter,' Philosophy, 38.
- De Jong, W.R.: 1982, The Semantics of John Stuart Mill, tr. by H.D. Morton, Dordrecht: D. Reidel.
- De Morgan, Augustus: 1926, Formal Logic, ed. by A.E. Taylor, London: Open Court.
- Descartes, Rene: 1911, The Philosophical Works of Descartes, tr. by Elizabeth Haldane and G.R.T. Ross, Cambridge: C.U.P.
- Dummett, Michael: 1976, 'What is a Theory of Meaning? (II),' in Truth and Meaning: Essays in Semantics, ed. by G. Evans and J. McDowell, Oxford: Clarendon Press.
- Dummett, Michael: 1978, Truth and Other Enigmas, London: Duckworth.
- Dummett, Michael: 1981, The Interpretation of Frege's Philosophy, London: Duckworth.
- Du Trieu, Philip: 1623, Manductio ad Logicam, Sive Dialectica Studiosae Iuventuti ad Logicam Praeparandae, Ingolstadt: Typis Wilhelmi Ederi.
- Ellis, Brian: 1979, Rational Belief Systems, Oxford: Blackwell.
- Field, Hartry: 1982, 'Realism and Relativism,' The Journal of Philosophy, 79.
- Foster, John: 1982, The Case for Idealism, London: Routledge and Kegan Paul.
- Frege, Gottlob: 1953, The Foundations of Arithmetic, tr. by J.L. Austin (2nd. ed.), Oxford: Blackwell.
- Frege, Gottlob: 1979, Posthumous Writings, ed. by H. Hermes et al. and tr. by P. Long and R. White, Oxford: Blackwell.

- Garrett, Don: 1981, 'Hume's Self Doubts about Personal Identity,' The Philosophical Review, 90.
- Goodman, Nelson: 1955, Fact, Fiction, and Forecast, Cambridge, MA: Harvard University Press.
- Green, T.H.: 1890, The Logic of J.S. Mill, in The Works of Thomas Hill Green, ed. by R.L. Nettleship, vol.2, London: Longmans, Green, & Co.
- Haack, Susan: 1982, 'Dummett's Justification of Deduction,' Mind, 91.
- Hamblin, C.L.: 1970, Fallacies, London: Methuen.
- Hamilton, Sir William: 1865, Lectures on Metaphysics (being vols. 1 and 2 of Lectures on Metaphysics and Logic), 3rd. ed., Edinburgh and London: Wm. Blackwood & Sons.
- Hamilton, Sir William: 1866, Discussions on Philosophy and Literature, Education and University Reform (3rd. ed.), Edinburgh and London: Wm. Blackwood & Sons.
- Hamilton, Sir William: 1874, Lectures on Logic (being vols. 3 and 4 of Lectures on Metaphysics and Logic) 3rd. ed., revised, Edinburgh and London: Wm. Blackwood & Sons.
- Hamlyn, D.W.: 1961, Sensation and Perception, London: Routledge and Kegan Paul.
- Hamlyn, D.W.: 1967, 'Empiricism,' in The Encyclopaedia of Philosophy, ed. by Paul Edwards, vol.2, New York: Macmillan and the Free Press.
- Hartley, David: 1749, Observations on Man, His Frame, His Duty, and His Expectations, London: Hitch and Austen.
- Herschel, Sir F.W.: 1831, A Preliminary Discourse on the Study of Natural Philosophy, London: Longman, Rees, Orme, Brown, and Green.
- Herschel, Sir F.W.: 1857, Essays from the Edinburgh and Quarterly Reviews, London: Longman, Brown, Green, Longmans, and Roberts.
- Hobbes, Thomas: 1839, Computation or Logic, in The English Works of Thomas Hobbes, ed. by Sir Wm. Molesworth, vol. 1, London: John Bohn.
- Holman, Harriet R.: 1970, 'J.S. Mill's Library, Provence, 1906,' The Mill News Letter, 6.
- Hospers, John: 1967, An Introduction to Philosophical Analysis, 2nd. ed., London: Routledge and Kegan Paul.
- Hume, David: 1888, A Treatise of Human Nature, ed. by L.A. Selby-Bigge, Oxford: Clarendon Press.
- Hume, David: 1902, Enquiries Concerning the Human Understanding and Concerning the Principles of Morals, ed. by L.A. Selby-Bigge, 2nd. ed., Oxford: Clarendon Press.
- Husserl, Edmund: 1969, Formal and Transcendental Logic, tr. by D. Cairns, The Hague: Nijhoff.

- Husserl, Edmund: 1970, Logical Investigations, tr. by J.N. Findlay, London: Routledge and Kegan Paul.
- Jackson, Reginald: 1941a: An Examination of the Deductive Logic of John Stuart Mill, London: O.U.P.
- Jackson, Reginald: 1941b: 'Mill's Treatment of Geometry - A Reply to Jevons,' in Mill: A Collection of Critical Essays, ed. by J.B. Schneewind, New York: Anchor Books.
- Jevons, W.S.: 1890, John Stuart Mill's Philosophy Tested, in Pure Logic and Other Minor Works, London: Macmillan.
- Joseph, H.W.B.: 1916, An Introduction to Logic, 2nd. ed., revised, Oxford: Clarendon Press.
- Kant, Immanuel: 1915, Prolegomena to any Future Metaphysic, vol.2 of Kant's Critical Philosophy, tr. and ed. by J.P. Mahaffy and J.H. Bernard, 3rd. ed., revised, London: Macmillan.
- Kant, Immanuel: 1933, Critique of Pure Reason, tr. by Norman Kemp Smith, 2nd. impression, corrected, London: Macmillan.
- Kitcher, Philip: 1979, 'Frege's Epistemology,' The Philosophical Review, 88.
- Kitcher, Philip: 1980, 'Arithmetic for the Millian,' Philosophical Studies, 37.
- Kneale, W. and M.: 1962, The Development of Logic, Oxford: Clarendon Press.
- Kripke, Saul: 1980, Naming and Necessity, rev. ed., Oxford: Blackwell.
- Kubitz, O.A.: 1932, Development of John Stuart Mill's System of Logic, Urbana, Illinois: Univ. of Illinois.
- Kyburg, Henry E., Jnr.: 1970, Probability and Inductive Logic, London: Macmillan.
- Lakatos, Imre (ed.): 1967, Problems in the Philosophy of Mathematics, Amsterdam: North Holland Publishing Company.
- Lehman, Hugh: 1979, Introduction to the Philosophy of Mathematics, Iowa, N.J.: Rowman and Littlefield.
- Lewis, David: 1973, Counterfactuals, Oxford: Blackwell.
- 'Lewis Carroll': 'What the Tortoise Said to Achilles,' Mind, n.s., 4.
- Locke, John: 1961, An Essay Concerning Human Understanding, London: Dent (Everyman's Library).
- Lockwood, Michael: 1975, 'On Predicating Proper Names,' The Philosophical Review, 84.
- McCloskey, H.J.: 1971, John Stuart Mill: A Critical Study, London: Macmillan.
- McCosh, James: 1866, An Examination of Mr. J.S. Mill's Philosophy, Being a Defence of Fundamental Truth, London: Macmillan.
- McGinn, Colin: 1982, The Character of Mind, Oxford: O.U.P.

- Mackie, J.L.: 1966, 'Proof,' Supplementary Proceedings of the Aristotelian Society, 40.
- McRae, R.F.: 1948, 'Phenomenalism and J.S. Mill's Theory of Causation,' Philosophy and Phenomenological Research, 9.
- McRae, R.F.: 1973, 'Introduction' in J.S. Mill, CW, vols. 7 and 8 (A System of Logic).
- Mandt, A.J.: 1984, 'Mill's Two Views on Belief,' Philosophy, 59.
- Mill, James: 1869, Analysis of the Phenomena of the Human Mind (2nd. ed.), ed. with additional notes by J.S. Mill, London: Longmans, Green, Reader, and Dyer.
- Nagel, Ernest: 1950, 'Introduction' in John Stuart Mill's Philosophy of Scientific Method, New York: Hafner.
- Nagel, Ernest: 1961, The Structure of Science, London: Routledge and Kegan Paul.
- Nordquest, David: 1979, 'Husserl and Mill's "Psychologism,"' The Mill News Letter, 14.
- O'Hanlon, Francis: 1866, A Criticism of John Stuart Mill's Pure Idealism; and an Attempt to Show that, if Logically Carried Out, It is Pure Nihilism, Oxford and London: Parker.
- Passmore, John: 1966, A Hundred Years of Philosophy, 2nd. ed., Harmondsworth: Penguin Books.
- Pitcher, George: 1977, Berkeley, London, Routledge and Kegan Paul.
- Platts, Mark (ed.): 1980, Reference, Truth and Reality, London: Routledge and Kegan Paul.
- Price, H.H.: 1926/27, 'Mill's View of the External World,' Proceedings of the Aristotelian Society, 27.
- Price, H.H.: 1953, Thinking and Experience, London: Hutchinson.
- Priestley, Joseph: 1965, Priestley's Writings on Philosophy, Science, and Politics, ed. by John Passmore, New York: Collier.
- Prior, Arthur: 1960, 'The Runabout Inference Ticket,' Analysis, 21.
- Prior, Arthur: 1962, Formal Logic, Oxford: O.U.P.
- Prior, Arthur: 1976, The Doctrine of Propositions and Terms, ed. by P.T. Geach and A.J.P. Kenny, London: Duckworth.
- Putnam, Hilary: 1978, Meaning and the Moral Sciences, London: Routledge and Kegan Paul.
- Quine, Willard V.O.: 1960, Word and Object, Cambridge, MA: The M.I.T. Press.
- Quine, Willard V.O.: 1961, From A Logical Point of View, 2nd., revised ed., New York: Harper and Row.

- Randall, J.H., Jr.: 1965, 'John Stuart Mill and the Working-Out of Empiricism,' Journal of the History of Ideas, 26.
- Reid, Thomas: 1858, The Works of Thomas Reid, D.D., 5th. ed., ed. by Sir Wm. Hamilton, Edinburgh: MacLachlan and Stewart; London: Longman, Brown, Green, and Longmans.
- Richards, John: 1980, 'Boole and Mill: Differing Perspectives on Logical Psychologism,' History and Philosophy of Logic, 1.
- Rosenberg, A.: 1973, 'Mill and Some Contemporary Critics on 'Cause,' 'The Personalist', 54.
- Russell, Bertrand: 1911, The Problems of Philosophy (reissued in Oxford Paperbacks University Series, 1967), London: O.U.P.
- Russell, Bertrand: 1951, 'John Stuart Mill,' in Mill: A Collection of Critical Essays, ed. by J.B. Schneewind, New York: Anchor Books.
- Ryan, Alan: 1970, The Philosophy of John Stuart Mill, London: Macmillan.
- Ryan, Alan: 1974, John Stuart Mill, London: Routledge and Kegan Paul.
- Ryan, Alan: 1979, 'Introduction' in J.S. Mill, CW, vol. 9 (An Examination of Sir William Hamilton's Philosophy).
- Ryle, Gilbert: 1950, ' 'If,' 'So,' and 'Because,' ' in Philosophical Analysis, ed. by Max Black, Ithaca: Cornell Univ. Press.
- Ryle, Gilbert: 1966, 'The Theory of Meaning,' in British Philosophy in the Mid-Century: A Cambridge Symposium, ed. by C.A. Mace, London: Allen and Unwin.
- Scarre, Geoffrey: 1981, 'A Simple Argument for Faith Requiring Reasons,' New Blackfriars, 62.
- Scarre, Geoffrey: 1983a, 'Was Mill Really Concerned with Hume's Problem of Induction?' The Mill News Letter, 18.
- Scarre, Geoffrey: 1983b, 'What Was Hume's Worry about Personal Identity?' Analysis, 43.
- Scarre, Geoffrey: 1984a, 'Proof and Implication in Mill's Philosophy of Logic,' History and Philosophy of Logic, 5.
- Scarre, Geoffrey: 1984b: Review of W.R. de Jong's The Semantics of John Stuart Mill, The Mill News Letter, 19.
- Schneewind, J.B.: 1968, Mill: A Collection of Critical Essays, New York, Anchor Books.
- Schneider, Herbert W.: 1935, 'Mill's Methods and Formal Logic,' Columbia Univ. Dept. of Philosophy Studies in the History of Ideas, 3.
- Sextus Empiricus: 1933, Outlines of Pyrrhonism, in Works, tr. by R.G. Bury, London and New York: Loeb Classical Library.
- Shoemaker, Sydney: 1963, Self-Knowledge and Self-Identity, Ithaca: Cornell Univ. Press.
- Smiley, Timothy: 1973, 'What is a Syllogism?' Journal of Philosophical

- Logic, 2.
- Smith, W.H.: 1866, 'J.S. Mill on Our Belief in the External World,' Blackwood's Magazine, 99.
- Sparshott, F.E.: 1978, 'Introduction' in J.S. Mill, CW, vol. 11 (Essays on Philosophy and the Classics).
- Spencer, Herbert: 1855, Principles of Psychology, London: Longman, Brown, Green, and Longmans.
- Spencer, Herbert: 1865, 'Mill versus Hamilton - The Test of Truth,' Fortnightly Review, 1.
- Stewart, Dugald: 1854-58, Collected Works of Dugald Stewart, ed. by Sir William Hamilton, Edinburgh: Thomas Constable and Co.; London: Hamilton, Adams and Co.
- Tarski, Alfred: 1949, 'The Semantic Conception of Truth,' in Readings in Philosophical Analysis, ed. by H. Feigl and W. Sellars, New York: Appleton-Century-Crofts.
- Thompson, Manley: 1947, 'J.S. Mill's Theory of Truth: A Study in Metaphysics and Logic,' The Philosophical Review, 56.
- Tillotson, John: 1728, The Rule of Faith, in The Works of the Most Rev. Dr. John Tillotson, Late Lord Archbishop of Canterbury, 9th. ed., London: J. Round.
- Toulmin, Stephen: 1958, The Uses of Argument, Cambridge: C.U.P.
- Venn, John: 1907, Empirical Logic, 2nd. ed., London: Macmillan.
- Vesey, Godfrey: 1968, 'Sensations of Colour,' in Mill: A Collection of Critical Essays, ed. by J.B. Schneewind, New York: Anchor Books.
- Walton, Douglas: 1977, 'Mill and De Morgan on Whether the Syllogism is a Petitio,' International Logic Review, 15.
- Ward, James: 1920, Psychological Principles, 2nd. ed., Cambridge: C.U.P.
- Ward, W.G.: 1871, 'Mr. Mill's Denial of Necessary Truth,' Dublin Review, 17.
- Warnock, Geoffrey: 1969, Berkeley (reissue in Peregrine Books), Harmondsworth: Penguin Books.
- Whately, Richard: 1844, Elements of Logic, 8th. ed., London: Fellowes.
- Whewell, William: 1847, The Philosophy of the Inductive Sciences, 'A new edition,' London: John Parker.
- Whewell, William: 1849, Of Induction, with Especial Reference to Mr. J. Stuart Mill's System of Logic, London: John Parker.
- Williams, Bernard: 1973, 'Deciding to Believe,' in Problems of the Self, Cambridge: C.U.P.
- Williams, John N.: 1981, 'Inconsistency and Contradiction,' Mind, 90.
- Wilson, Fred: 1982, 'Mill on the Operation of Discovering and Proving General Propositions,' The Mill News Letter, 17.

- Wittgenstein, Ludwig: 1953, Philosophical Investigations, tr. and ed.  
by E. Anscombe and R. Rhees.
- Wolfe, J.: 1976, 'Mill on Causality,' The Personalist, 57.
- Wollheim, Richard: 1969, F.H. Bradley (reissue in Peregrine Books),  
Harmondsworth: Penguin Books.
- Woods, John and Walton, Douglas: 1975a, 'Is the Syllogism a Petitio  
Principii?' The Mill News Letter, 10.
- Woods, John and Walton, Douglas: 1975b, 'Petitio Principii,' Synthese,  
31.
- Wright, Crispin: 1980, Wittgenstein on the Foundations of Mathematics,  
London: Duckworth.